

Research Article

Blueprints to Accelerate the Student's Academic Motivation and Engagement in Health Education

Nwankwo Nonyelum Stella 

Department of Human Kinetics and Health Education, Nwafor Orizu College of Education, Nsugbe, Nigeria
E-mail: nwankwostella100@gmail.com

Received: 20 June 2022; Revised: 19 August 2022; Accepted: 20 August 2022

Abstract: This study investigated ways to boost students' academic interest and involvement in health education. The study was designed using survey methods. Two research questions and hypotheses were explored to achieve the research goal. The study's population included thirty (30) government secondary school health education teachers and sixteen (16) private secondary school health education teachers in Anambra State's Ogidi Education Zone, with no sampling due to the study's manageable size. Data were collected using a standardized 20-item questionnaire that two experts thoroughly verified. Mean scores and standard deviations were used for the research questions, and a t-test was used for the hypotheses. The study's main findings revealed that students' perceived academic motivation and participation in health education are unaffected by the type of school they attend (public or private). According to the findings, teachers should establish an active learning environment that increases students' perceived autonomy by giving them choices and opportunities for self-directed learning, which may improve their motivation and engagement.

Keywords: blueprints, accelerate, academic motivation, academic engagement, health education

1. Introduction

Health education is a social science that uses biological, environmental, psychological, physical, and medical knowledge to enhance health and prevent disease, disability, and premature death through education-driven voluntary behavior modification activities. Health education is one way to conduct health promotion and illness prevention initiatives. Health education gives opportunities to learn about many health subjects. Health education techniques are adapted to the demographics of the people who will benefit from them (Harvey et al., 2022). In an appropriate environment, health education gives information to target audiences on specific health subjects, including the health advantages and hazards they face, as well as tools to develop capacity and promote behavior change. Students' participation in health education has traditionally centered on enhancing achievement, good habits, and a sense of belonging to succeed in school. Because the goal was to get students to finish high school, research on student engagement focused on students in middle and high school, where disengagement and poor performance is more common (Yau et al., 2022). Student engagement in education refers to the level of attention, curiosity, interest, optimism, and enthusiasm that students display when learning or being taught, as well as their drive to study and advance in their education (Rodríguez et al., 2015).

Student involvement tactics have evolved and been more widely used as a means of controlling classroom conduct throughout time (Finn & Zimmer, 2012). Academic engagement is an essential academic outcome in and of itself because it improves performance, validates positive expectations about academic abilities, and is a good predictor of children's long-term academic achievement (Lei et al., 2018). Many scholars have focused on student motivation and academic engagement to enhance students' performance in the classroom (Loes, 2022; Saleh et al., 2021; Perkmann et al., 2021). Encouraging children to learn in school is a significant worry for educators today, and motivating students to succeed in school is one of the century's most complex challenges. According to the authors, lack of desire is a significant barrier to learning and a contributing factor in the decline of educational standards. The only goal of teachers in the classroom should be to get students to learn and keep them interested in what they are learning. Motivation is, therefore, a decisive factor in achieving goals. Motivation is one of the aspects that contribute to academic achievement, according to Paris et al. (1983), and parents and educators should attempt to grasp the value of nurturing and supporting academic motivation early in life.

Motivation is defined by Rowell and Hong (2013) as forces that influence and fuel human and other creatures' activity; it is a process that begins, directs, and maintains action to meet physiological or psychological demands. Motivation is also defined as the force that propels one forward, holds one's progress, and decides one's destination (Koenka, 2020). Intrinsic and extrinsic motivations are the two primary forms of motivation. Extrinsic motivation is based on external elements such as rewards and punishment, but intrinsic motivation is based on internal aspects such as self-determination, effort, challenge, and curiosity (Legault, 2016). Academic motivation, often known as motivation to learn, is a term that relates to a student's primary drive for starting and continuing a long and arduous learning process.

As Dierendonck et al. (2021) said, academic motivation and engagement are two connected characteristics critical for students' greater attainment, progress, and academic success. Regarding the importance of student academic motivation in instructional-learning contexts, both intrinsic and extrinsic motivation may positively impact students' academic success. To emphasize the importance of student academic engagement, Saleh et al. (2021) said that students who participate actively in instructional-learning environments obtain higher academic marks. Hence, a student's level of engagement in educational situations is linked to their academic progress. Furthermore, students' academic engagement can significantly improve their chances of academic achievement. Based on what has been said about the importance of academic motivation and engagement in students' academic achievement, determining the causes and predictors of these factors is critical. This will make it easier to create a blueprint for long-term academic motivation and engagement that demonstrates how it should be done.

Students' academic performance suffers due to a lack of academic motivation and engagement. Because health education deals with people's lives, a lack of motivation might hurt public health, resulting in the possible loss of life. This study attempts to elaborate on techniques to promote academic motivation and engagement in health education students, considering the relevance of motivation and engagement in health education students as well as the obstacles. Against this context, several research has looked at the influence of school type on students' academic motivation (e.g., public and private school). Despite the significance of enhancing students' academic motivation and engagement, only a few academics (Edgar et al., 2019; Gladman et al., 2020; Casuso-Holgado et al., 2013) have examined motivation and engagement about medical and health professions program. To close the existing gaps, the present research aims to identify effective ways to boost students' academic motivation and participation in health education. The study's goal is to:

1. ascertain the strategies to accelerate the public and private secondary school student's academic motivation in health education.
2. determin the strategies to accelerate the public and private secondary school student's academic engagement in health education.

Two research questions guided the study are:

1. What are the strategies to accelerate the secondary school student's academic motivation in health education.
2. What are the strategies to accelerate the secondary school student's academic engagement in health education.

Two null hypotheses were tested at a 0.05 level of significance to guide the study's conduct:

H_0 ₁: The type of school (public and private) attended by students does not significantly influence their perceived academic motivation in health education.

H_0 ₂: The type of school (public and private) attended by students does not have a significant influence on their

perceived academic engagement in health education.

2. Method

The survey approach was used to compare the tactics employed by public and private school instructors to increase student academic motivation and participation in health education. A survey technique is an inquiry that collects information on participants' opinions, interests, abilities, and attitudes with respect to a situation or event using question-based or statistical surveys (Eden, 2021).

This research was carried out at Anambra State's Ogidi Education Zone. Idemili North, Idemili South, and Oyi Local Government Areas make up the zone. The study's participants were thirty (30) government secondary school health education teachers and sixteen (16) private secondary school health education teachers in Anambra State's Ogidi Education Zone. Because the research population was small, no sampling was done. As a result, the sample size for the study was fifty-six (56) secondary school health education instructors. The Student's Academic Motivation and Engagement Scale (SAMES), which the researcher designed, was utilized to collect data. There are two components to this instrument. A and B are two possible options. The questionnaire's demographic information collected in Section A was used to determine the kind of school. Section B is about academic motivation and engagement. It contains 20 items on a 4-point rating scale, with respondents ticking the appropriate column to indicate how much they agreed or disagreed with the items about their student's academic motivation and engagement in health education.

The instrument was tested for face and content validity by two experts: one in Educational Psychology from Nwafor Orizu College of Education Nsugbe and another in human kinetics and health education. These specialists were quite helpful in making changes that resulted in the removal of some components and the instrument being recast according to their instructions. A trial test was undertaken to assess the instrument's dependability assure reliability. The instrument was given to 20 instructors from public and private schools in the Awka Education Zone of Anambra State, which is not part of the research region. To avoid contamination from the primary parent population, the location was chosen. The instrument's internal consistency was calculated using data from the reliability test. Cronbach Alpha was used to determine the instrument's internal consistency reliability, and the result was 0.93. To distribute the device, the researcher enlisted the help of six (6) research assistants. An on-the-spot mode was used to guarantee that the device collected as much data as possible. The data were analyzed descriptively with a mean score and standard deviation t-test. The respondents used a mean of 2.50 or higher criterion for adopting a questionnaire item as a factor. The hypotheses were examined using t-test analysis, while the research questions were addressed using the mean score and standard deviation.

3. Results

The data analysis on the research questions and hypotheses obtained from the instrument were presented in Tables 1, 2, 3 and 4 as follows.

Research question 1: What are the strategies to accelerate secondary school students' academic motivation in health education?

Table 1 shows ways to increase academic motivation in health education among public and private secondary school students. Teachers in both public and private schools agreed that assisting students in overcoming educational problems through counselling will increase their academic motivation in health education (public schools = 3.40, private schools = 3.56). However, when it comes to giving students responsibility, cultivating a good attitude, and sparking curiosity, public and private school instructors have opposing views (public schools = 1.63, private schools = 3.13). It is self-evident that using positive competition and praising hardworking students' academic accomplishments would increase students' academic motivation in health education (public schools = 3.26, private schools = 2.94).

Table 1. The mean and standard deviation of responses on strategies to accelerate public and private secondary school students' academic motivation in health education

S/N	ITEM	Public schools			Private schools		
		\bar{x}	SD	Dec.	\bar{x}	SD	Dec.
1	Utilizing interdependent collaborative student teams and studentcentered instruction will accelerate the student's academic motivation in health education	3.03	0.87	A	3.25	0.90	A
2	Appreciating hard-working teachers and establishing a teaching quality improvement committee will accelerate the student's academic motivation in health education	1.96	1.14	R	3.06	0.89	A
3	Providing educational and welfare facilities at clinical environment will accelerate the student's academic motivation in health education	2.80	1.30	A	1.94	1.02	R
4	Limiting specialized health education courses to morning hours and beginning of the week will accelerate the student's academic motivation in health education	2.83	1.13	A	3.06	1.29	A
5	Offering varied experiences and providing proper educational facilities such as wellequipped laboratory will accelerate the student's academic motivation in health education	2.96	1.01	A	2.18	1.13	R
6	Use of positive competition and appreciating academic achievement of hard-working students will accelerate the student's academic motivation in health education	3.26	0.96	A	2.94	1.14	A
7	Supporting students through counseling to overcome educational challenges will accelerate the student's academic motivation in health education	3.40	0.84	A	3.56	0.78	A
8	Giving students responsibility, creating positive attitude and interest will accelerate the academic motivation in health education	1.63	1.07	R	3.13	1.16	A
9	Holding extracurricular activities such as sports events, cultural works, and leisure activities along with educational activities is effective in the academic motivation of students	3.20	1.16	A	2.94	1.02	A
10	Prioritizing Standards, giving praise when earned and encouraging self-reflection will accelerate the academic motivation in health education	2.86	1.05	A	2.00	1.00	R
TOTAL		27.93	10.53		28.06	10.33	

R = Rejected, A = Accepted, \bar{x} = mean, SD = standard deviation, Dec. = decision.

The standard deviation is a measure of the dispersion from the mean or variability. The lower standard deviation of the private school type suggested that a more significant number of respondents agreed on the topic or item discussed. In contrast, the higher standard deviation of the public school type indicated that a smaller number of respondents agreed on the topic or item given. On the whole, items 1, 3, 4, 5, 6, 7, 9 and 10 submit mean scores of 3.03, 2.80, 2.83, 2.96, 3.26, 3.40, 3.20 and 2.86, corresponding to standard deviations of 0.87, 1.30, 1.13, 1.01, 0.96, 0.84, 1.16 and 1.05 were accepted by public school teachers. In contrast, items 2 and 8 with mean scores of 1.96 and 1.63 and standard deviations of 1.14 and 1.07 were rejected respectively. Also, items 1, 2, 4, 6, 7, 8 and 9 submit mean scores of 3.25, 3.06, 3.06, 2.94, 3.56, 3.13 and 2.94, corresponding to standard deviations of 0.90, 0.89, 1.29, 1.14, 0.78, 1.16 and 1.02 were accepted private school teachers. In contrast, items 3, 5 and 10 with mean scores of 1.94, 2.18 and 2.00 and standard deviations of 1.02, 1.13 and 1.00 were rejected respectively.

Hypothesis I: The type of school (public and private) attended by the students does not have a significant influence on their perceived academic motivation in health education.

The students' perceived academic motivation in health education is unaffected by the type of school they attend (public or private), according to data in Table 2. The estimated t-value of -0.0404 is not significant at 0.05. level of

probability. The null hypothesis is accepted that there is no substantial difference in academic motivation between public and private schools. As a result, the results imply that there is no substantial difference in the types of schools (public and private) that students attend.

Table 2. T-test analysis of influence of the type of the school (public and private) on their perceived academic motivation in health education

School type	<i>n</i>	\bar{x}	SD	t-cal	t-crit	df	sig.	Dec.
Public schools	30	27.93	10.53	-0.0404	2.015	44	0.05	Not Sig.
Private schools	16	28.06	10.33					

Research question 2: What are the strategies to accelerate the secondary school student's academic engagement in health education?

Table 3. Mean and standard deviation of responses on strategies to accelerate the secondary schools' student's academic engagement in health education

S/N	ITEM	Public schools			Private schools		
		\bar{x}	SD	Dec	\bar{x}	SD	Dec.
11	Using a variety of teaching methods will accelerate the student's academic engagement in health education	3.03	0.87	A	2.87	1.05	A
12	Getting to know the students and ensuring that institutional cultures are welcoming will accelerate the student's academic engagement in health education	1.73	0.96	R	3.63	0.85	A
13	Investing in a variety of support services and integrating technology into the classroom will accelerate the student's academic engagement in health education	3.50	0.88	A	3.00	1.00	A
14	Embracing project-based learning and scaffolding tasks with checkpoints will accelerate the student's academic engagement in health education	2.83	1.13	A	2.68	1.40	A
15	Encouraging friendly competition and educational experiences that are enriching will accelerate the student's academic engagement in health education	3.00	1.06	A	2.81	1.13	A
16	Providing opportunities for students to build on the existing knowledge will accelerate the student's academic engagement in health education	3.36	0.84	A	3.06	0.89	A
17	Incorporating activities that allow students to reflect and summarize on what they have learned will accelerate the student's academic engagement in health education	3.70	0.69	A	3.00	0.93	A
18	Presenting the students with options within the classroom to enable them to develop their social capital will accelerate the student's academic engagement in health education	1.53	0.76	R	2.94	1.14	A
19	Resisting the temptation to re-teach and focusing mainly on depth over breadth will accelerate the student's academic engagement in health education	3.30	0.78	A	2.37	1.11	R
20	Acknowledging students' social and emotional well-being by providing targeted and timely feedback will accelerate the student's academic engagement in health education	3.56	0.84	A	3.37	1.05	A
TOTAL		29.54	8.81		29.73	10.55	

R = Rejected, A = Accepted, \bar{x} = mean, SD = standard deviation, Dec. = decision.

Table 3 shows how to increase students' academic involvement in health education in public and private secondary schools. Students' academic engagement in health education will be accelerated if activities that allow students to reflect and summarize what they have learnt are included (public schools = 3.70, private schools = 3.00). Investing in a range of support services and incorporating technology into the classroom would also help students participate in health education more academically (public schools = 3.50, private schools = 3.00). However, public and private school teachers disagree on whether providing students with options within the classroom to help them develop their social capital will increase their academic engagement in health education. The respondents rejected this idea, with a mean score of 1.53 for public school teachers and 2.94 for private school teachers.

A statistic indicating dispersion from the mean is the standard deviation. The lower standard deviation of the public school type showed that more people agreed on the topic than the higher standard deviation of the private school type. In all, items 11, 13, 14, 15, 16, 17, 19 and 20 with mean scores of 3.03, 3.50, 2.83, 3.00, 3.36, 3.70, 3.30 and 3.56 corresponding to standard deviations of 0.87, 0.88, 1.13, 1.06, 0.84, 0.69, 0.78 and 0.84 were respectively accepted by public school teachers whereas items 12 and 18 were rejected with a mean scores of 1.73 and 1.53 corresponding to standard deviations of 0.96 and 0.76. In the case of private schools, items 11, 12, 13, 14, 15, 16, 17, 18 and 20 with mean scores of 2.87, 3.63, 3.00, 2.68, 2.81, 3.06, 3.00, 2.94 and 3.37 corresponding to standard deviations of 1.05, 0.85, 1.00, 1.40, 1.13, 0.89, 0.93, 1.14 and 1.05 were accepted while item 19 was rejected with a mean score of 2.37 corresponding to standard deviation of 1.11.

Hypothesis 2: The type of school (public and private) attended by the students does not have a significant influence on their perceived academic engagement in health education.

Table 4. T-test analysis on the influence of type of the school (public and private) on perceived academic engagement in health education

School type	<i>n</i>	\bar{x}	SD	t-cal	t-crit	df	sig.	Dec.
Public schools	30	29.54	8.81					
				-0.0615	2.015	44	0.05	Not Sig.
Private schools	16	29.73	10.55					

Table 4 reveals that the type of school attended by the students (public or private) had no significant impact on their perceived academic engagement in health education. The estimated t-value of -0.0615, which is negligible at the 0.05 levels of probability, demonstrates this. The null hypothesis, that there is no substantial difference between public and private schools in terms of their perceived academic commitment to health education, is accepted. As a result, the statistics imply that the difference in school type (public vs. private) attended by the students is not relevant.

4. Discussion

The first research topic was to discover techniques for increasing secondary school students' academic motivation in health education. Based on the data, it was discovered that assisting students in overcoming educational problems through counseling will increase their academic motivation in health education. Programs, cooperative learning, peer mentorship, peer counseling, and community service all contribute to students' feelings and motivation, according to Paris et al. (1983). In addition, Saleh et al. (2021) discovered that counseling increased drive and self-efficacy. Students' motivation, attitude toward the instructor, and impressions of the course have all been demonstrated to improve because of this. According to the research, students' academic motivation in health education may be accelerated by using interdependent collaborative student teams and student-centered instruction. This is in line with the recent result by Loes (2022). They claimed that the favorable association between cooperative learning and academic motivation is the same for all students regardless of race or ethnicity. Positive competition and praising hard-working students' academic

achievements would boost students' academic motivation in health education. According to Wilkesman et al. (2012), students with high academic drive are more open to learning and are more interested in the course. Academic motivation is also necessary for students to tackle challenges that arise throughout the learning process.

The second research topic concerns measures to increase secondary school students' academic involvement in health education. The findings demonstrated that including activities that allow students to evaluate and summarize what they have learned helps improve the student's academic engagement in health education, as well resist the desire to re-teach and focusing primarily on depth over breadth. Wang and Degol (2014) echoed these findings, emphasizing the importance of incorporating more research into how learning-related emotions, personality traits, prior learning experiences, shared values across contexts, and participation in nonacademic activities influence individual differences in student engagement. The findings of this study revealed that investing in a range of support services and incorporating technology into the classroom can help students become more engaged in health education academically. This is in line with Moalosi (2012), who states that a "teacher who arrives to the classroom and prepares lessons with intention is much more likely to positively affect student engagement and learning than a teacher who regards his or her role as merely a job to be endured". Another research, titled Improving Student Engagement, claims that student engagement has traditionally centered on the raising achievement, good behaviors, and a sense of belonging in kids for them to stay in school (Taylor & Parsons, 2011). However, the respondents in this survey disagreed that getting to know the students and ensuring that institutional cultures are inviting can help students participate in health education more academically. This study contradicts Liu (2013), who claimed that teachers cannot provide tailored education or inspiring surroundings without knowing their students. Highly effective instructors discover ways to learn about their students and to let them know they are known by creating opportunities for them to do so.

5. Conclusion

The research investigated how to boost students' academic enthusiasm and involvement in health education. The findings of this study demonstrate that assisting students in overcoming educational problems through counselling will increase their academic motivation in health education. According to the research, incorporating activities that allow students to evaluate and summarize what they have learned would also increase their academic engagement in health education. Also, getting to know the students and ensuring that the institutional cultures are inviting can help students academically participate in health education. Teachers and educators will be better able to aid and support students suffering from health education for a long time if they have a better understanding of how each of the motivating objectives, kinds, and dimensions affects learning. The significance of this research stems from the fact that student motivation and engagement are two of the most important examples of positive academic behaviors that aid in their learning achievement. As a result, one of the primary responsibilities of all effective teachers is to increase students' academic enthusiasm and involvement.

The findings of this study will be particularly relevant and beneficial to health education teachers and students, given that the study focuses on students' academic motivation and participation in health education. The findings of this study will also be used to urge ministries of education and boards of education, as well as researchers, to emphasize the importance of motivation and participation in health education in both public and private schools.

6. Recommendations

The student's academic motivation and engagement in health education can be improved by adopting the following measures.

1. Teachers should establish an active learning environment through needs assessment for implementing an active learning strategy that fosters students' sense of autonomy and competence.
2. Schools should work to establish discipline success in the classroom by creating consistency and making sure that punishments and rewards are clear.
3. The government should help provide the necessary resources, equipment, and atmosphere for students to acquire

health education in public schools with help from donor agencies and good-spirited individuals.

4. The school board should begin recruiting, training, and developing personnel, which is critical for effective performance, to increase students' academic achievement in health education.

5. Assigning students classroom jobs, such as classroom librarian, messenger, calendar helper, chair monitor, equipment helper, line leader and/or caboose, bag monitor and technology helper. A teacher's assistant is a great way to build a community and to give students a sense of motivation.

Conflict of interest

There is no conflict of interest.

References

Casuso-Holgado, M. J., Cuesta-Vargas, A. I., Moreno-Morales, N., Labajos-Manzanares, M. T., Barón-López, F. J., & Vega-Cuesta, M. (2013). The association between academic engagement and achievement in health sciences students. *BMC Medical Education*, 13(33), 1-7. <https://doi.org/10.1186/1472-6920-13-33>

Dierendonck, C., Tóth-Király, I., Morin, A. J., Kerger, S., Milmeister, P., & Poncelet, D. (2021). Testing associations between global and specific levels of student academic motivation and engagement in the classroom. *The Journal of Experimental Education*, 1-24. <https://doi.org/10.1080/00220973.2021.1913979>

Eden, D. (2021). The science of leadership: A journey from survey research to field experimentation. *The Leadership Quarterly*, 32(3), 101472. <https://doi.org/10.1016/j.leaqua.2020.101472>

Edgar, S., Carr, S. E., Connaughton, J., & Celenza, A. (2019). Student motivation to learn: Is self-belief the key to transition and first year performance in an undergraduate health professions program? *BMC Medical Education*, 19(1), 111. <https://doi.org/10.1186/s12909-019-1539-5>

Finn, J. D., & Zimmer, K. S. (2012). Student engagement: What is it? Why does it matter? In: Christenson, S., Reschly, A., Wylie, C. (eds). *Handbook of Research on Student Engagement*. Boston: Springer. https://doi.org/10.1007/978-1-4614-2018-7_5

Gladman, T., Gallagher, S., & Ali, A. (2020). MUSIC® for medical students: Confirming the reliability and validity of a multi-factorial measure of academic motivation for medical education. *Teaching and Learning in Medicine*, 32(5), 494-507. <https://doi.org/10.1080/10401334.2020.1758704>

Harvey, M., Neff, J., Knight, K. R., Mukherjee, J. S., Shamasunder, S., Le, P. V., Tittle, R., Jain, Y., Carrasco, H., Bernal-Serrano, D., Goronga, T., & Holmes, S. M. (2022). Structural competency and global health education. *Global Public Health*, 17(3), 341-362. <https://doi.org/10.1080/17441692.2020.1864751>

Koenka, A. C. (2020). Academic motivation theories revisited: An interactive dialog between motivation scholars on recent contributions, underexplored issues, and future directions. *Contemporary Educational Psychology*, 61, 101831. <https://doi.org/10.1016/j.cedpsych.2019.101831>

Legault, L. (2016). Intrinsic and extrinsic motivation. *Encyclopedia of Personality and Individual Differences*, 2416-2419. https://doi.org/10.1007/978-3-319-28099-8_1139-1

Lei, H., Cui, Y., & Zhou, W. (2018). Relationships between student engagement and academic achievement: A meta-analysis. *Social Behavior and Personality: An International Journal*, 46(3), 517-528. <https://doi.org/10.2224/sbp.7054>

Liu, P. (2013). Perceptions of the teacher-student relationship: A study of upper elementary teachers and their students. *International Education*, 42(2), 21-40.

Loes, C. N. (2022). The effect of collaborative learning on academic motivation. *Teaching and Learning Inquiry*, 10. <https://doi.org/10.20343/teachlearninqu.10.4>

Moalosi, W. T. S. (2012). Teacher efficacy: Is student engagement essential in Botswana junior secondary schools? *International Journal of Scientific Research in Education*, 5(3), 207-213.

Paris, S. G., Olson, G. M., & Stevenson, H. W. (Eds.). (1983). *Learning and motivation in the classroom* (1st ed.). London: Routledge. <https://doi.org/10.4324/9781315188522>

Perkmann, M., Salandra, R., Tartari, V., McKelvey, M., & Hughes, A. (2021). Academic engagement: A review of the literature 2011-2019. *Research Policy*, 50(1), 104114. <https://doi.org/10.1016/j.respol.2020.104114>

Rodríguez, C. V., Lavalle, M. M., & Elías, R. P. (2015, November). Modeling student engagement by means of nonverbal behavior and decision trees. In *2015 International Conference on Mechatronics, Electronics and Automotive Engineering (ICMEAE)* (pp. 81-85). IEEE. <https://doi.org/10.1109/ICMEAE.2015.56>

Rowell, L., & Hong, E. (2013). Academic motivation: Concepts, strategies, and counseling approaches. *Professional School Counseling, 16*(3), 158-171. <https://doi.org/10.1177/2156759X1701600301>

Saleh, M., Suriansyah, A., & Anita. (2021). The influence of motivation, guidance and counseling teacher activities in deliberation and professionalism. *Journal of K6 Education and Management, 4*(2), 129-135. <https://doi.org/10.11594/jk6em.04.02.02>

Taylor, L., & Parsons, J. (2011). Improving student engagement. *Current Issues in Education, 14*(1).

Wang, M. T., & Degol, J. (2014). Staying engaged: Knowledge and research needs in student engagement. *Child Development Perspectives, 8*(3), 137-143. <https://doi.org/10.1111/cdep.12073>

Wilkesman, U., Fischer, H., & Virgillito, A. (2012). *Academic motivation of students-the German case*. Technische Universität, Dortmund.

Yau, P. S., Cho, Y., Shane, J., Kay, J., & Heckhausen, J. (2022). Parenting and adolescents' academic achievement: The mediating role of goal engagement and disengagement. *Journal of Child and Family Studies, 31*(4), 897-909. <https://doi.org/10.1007/s10826-021-02007-0>