



Flipped Teaching And Its Effect On Mathematics Self-Efficacy Among Secondary Students

Dr. Nida Khan

Department of Teacher Education
Vardhaman College, Bijnor

Prof. Dharmendra Kumar

Department of Teacher Education
Vardhaman College, Bijnor

Abstract

The researchers assessed how flipped teaching affects mathematics self-efficacy of class XI standard students. The study applied a pre-test and post-test equivalent group experimental design to test 200 students who were categorized into two groups: the experimental group ($n = 100$) underwent flipped teaching, while the control group ($n = 100$) received conventional teaching. The intervention was executed through two instructional units, which included sets and relations and functions. The researchers used their own flipped teaching plan together with a verified mathematics self-efficacy scale (MSES), which assesses four different aspects of self-efficacy in mathematics: mathematics confidence, motivation and effort, anxiety and stress and goal orientation and mastery. The statistical analysis demonstrated that the experimental group achieved higher overall self-efficacy scores in comparison to the control group with a t score of 16.95, a p value smaller than 0.01 and a d value of 2.41 which showed a very large effect size. The experimental group results showed no gender differences because boys and girls showed equal benefits from flipped teaching ($t = 1.35, p > 0.05$). The findings demonstrate that flipped teaching functions as an effective and fair educational method which research supports to improve learner's self-efficacy in mathematics.

Keywords: Flipped Teaching, Mathematics Self-Efficacy, Secondary Students, Bloom's Taxonomy, Gender.

1. Introduction

Secondary school mathematics education determines students' educational trajectories, cognitive development and professional decisions. Students develop their mathematical abilities through educational systems that teach them abstract mathematical concepts and fundamental mathematical operations. The teaching methods used for math instruction produce strong effects on students' academic achievement and their growth of self-assurance as mathematics learners. The worldwide educational

system faces a major mathematics teaching issue which centres on students who demonstrate low mathematical confidence levels which were defined by Albert Bandura in 1986 and Frank Pajares and Dale H. Miller in 1994.

Low mathematics self-efficacy is far more than a minor psychological concern. Research findings demonstrate that students with this condition tend to select easier tasks instead of difficult ones which results in their studying Math material for shorter periods and their developing math anxiety which leads to lower academic performance (Gail Hackett & Nancy E. Betz, 1989; Barry J. Zimmerman, Bandura, & Martinez-Pons, 1992). The Indian secondary education system which depends on board exams and entrance tests and follows a structured curriculum creates an educational environment where students with low self-efficacy face significant challenges that restrict their chances to enter STEM fields and pursue higher education.

The traditional teacher-centred teaching method which still exists in most secondary math classrooms provides students with few chances to achieve mastery through peer modelling and scientific peer feedback which constitutes essential methods for developing self-efficacy according to Albert Bandura and Dale H. Schunk. Teachers need to develop instructional methods which will help students understand mathematical content while simultaneously supporting their emotional development. Flipped teaching operates as an instructional model which combines pre-class video lessons with direct instruction while using class time for interactive problem solving and advanced learning endeavours (Jonathan Bergmann & Aaron Sams 2012 Gökçe Akçayır & Murathan Akçayır 2018).

2. Review of Literature

The Social cognitive theory of Albert Bandura (1986, 1994) explains that “self-efficacy which describes an individual proficiency to imply necessary tasks for specific results develops through four main sources which include mastery experiences and vicarious learning and social persuasion and physiological and emotional state regulation”. These sources in mathematics education research directly match the experiences students have in classrooms. Students achieve better results through problem-solving activities which build their mastery skills while they learn from watching successful peers and teachers provide positive feedback to students and classrooms create secure environments which help students control their body functions. The research conducted by Frank Pajares and Dale H. Miller (1994) showed that mathematics self-efficacy function as a stronger determinant of performance than prior performance. Ellen L. Usher and Pajares (2009) showed that students' mathematical self-beliefs develop mainly from their mastery experiences.

The research illustrates that mathematics self-efficacy function as the main component which determines secondary school student learning results. The research by Gail Hackett and Nancy E. Betz from 1989 proved that self-efficacy functions as a predictor for mathematics performance which operates independently from student ability and their past academic results. The research conducted by Mark H. Ashcraft and Alex M. Krause in 2007 proved that mathematics anxiety which restricts self-efficacy results in working memory disruption subsequently decreases problem-solving performance.

The current research shows that students who learn through active structured environments will develop better mathematical confidence and experience, reduced anxiety compared to those who learn through passive instructional methods (Asfaw, 2022; Jamil & Mahmud, 2018; Stanberry & Payne, 2018). The research on flipped classrooms has produced successful results because AlJaser (2017) and Afaf (2017) showed that university students experienced increased self-efficacy after they participated in flipped learning environments. The research conducted by Cascolan in 2023 demonstrated that students who participated in flipped chemistry classes at the secondary level acquired both self-efficacy and metacognitive skills.

The flipped classroom model received its introduction through Jonathan Bergmann and Aaron Sams in 2012 and developed it into an educational method with strong research evidence across various academic fields and school systems. Jacob L. Bishop and Matthew A. Verleger (2013), in their review of 24 studies, reported consistent improvements in student engagement and learning outcomes in flipped environments. Gökçe Akçayır and Murathan Akçayır (2018) conducted an analysis of 71 studies which showed that students achieved better academic results especially in mathematics and STEM fields.

The meta-analysis conducted by Bing Zheng and his colleagues in 2020 demonstrated that flipped learning produces positive effects on student achievement and motivation throughout educational settings. The research studies conducted by Kiran K. Bhagat and Ching-Yi Chang and Chih-Hung Chang (2016) and Xiaohui Wei and Betty Love (2014) and their co-researchers found that flipped classrooms produced significant educational improvements at both secondary and tertiary educational levels.

The research study conducted by Birundha and Manoharan (2020) showed that standard XI chemistry students achieved better results through flipped teaching methods. Malhotra and Bhagat (2022) found that Indian medical students exhibited high levels of preparedness to participate in flipped classroom instruction.

2.1 Research Gap

The existing research about flipped teaching continues to grow yet there are still significant research deficits. Most research studies about mathematics self-efficacy have been conducted at universities while researchers have paid less attention to XI standard secondary students who study under the Indian curriculum. The existing research about mathematics self-efficacy treats it as a single-dimensional construct which includes confidence and motivation and anxiety and mastery orientation. Researchers have a limited availability of studies which implement rigorous testing methods that separate results by gender.

The researchers conducted their study to fill existing research gaps through their research about flipped teaching which affected secondary school students' multidimensional mathematics self-efficacy in a controlled experimental setting.

3. Need for the study

The present research was undertaken to examine the effect of flipped teaching on the mathematics self-efficacy of XI standard secondary school students in Bijnor. Research studies about flipped teaching now exist across various countries but Indian researchers have yet to perform further studies about flipped teaching in secondary mathematics education. Indian research studies restrict themselves to higher education programs while assessing academic performance without considering students' emotional responses to learning which includes their mathematics self-efficacy because it affects their capability to study and perform well in academic tasks.

The study establishes its research methods through complete implementation of a flipped teaching program which the researchers designed to teach two XI standard mathematics units named sets and relations and functions. The study investigated mathematics self-efficacy development while testing whether gender differences affect flipped teaching outcomes which addresses critical issues of fairness and access that matter to Indian secondary education system.

Thus, the study needs to find how flipped teaching affected mathematics self-efficacy among class XI secondary school students who learned and examining how different genders responded to these instructional methods.

4. Objectives of the study

- 1) To identify the self-efficacy of XI standard students in mathematics after the treatment of flipped teaching.
- 2) To identify the significant difference between experimental group (flipped teaching) and control group (traditional teaching) in XI standard students' self-efficacy in mathematics.

5. Hypothesis of the study

- 1) There is no significant difference in pre-test mathematics self-efficacy scores of the XI standard students in the experimental group (Flipped teaching) and the control group (Traditional teaching).
- 2) There is no significant difference between the pre-test and post-test mathematics self-efficacy scores of XI standard students in the experimental group.
- 3) There is no significant difference between the pre-test and post-test mathematics self-efficacy scores of XI standard students in the control group.
- 4) There is no significant difference in post-test mathematics self-efficacy scores between XI standard students in the experimental group (Flipped teaching) and the control group (Traditional teaching).
- 5) There is no significant gender difference in the post-test mathematics self-efficacy scores of XI standard students in the experimental and control group.
- 6) There is no significant interaction effect between teaching method and gender on the post-test mathematics self-efficacy scores of XI standard students.

6. Methodology

6.1 Research Design

The study was conducted using a pre-test and post-test equivalent group experimental method. The researchers divided the participants in two groups which included an experimental group (EG) and a control group (CG). Pre-test scores were analysed to ensure statistical equivalence between the groups ahead to the intervention. The experimental group were provided instruction through the flipped teaching whereas the control group was educated using conventional teaching methods during the same instructional period.

6.2 Sample

The study selected 200 students from XI standard who came from four secondary schools in Bijnor among which 100 boys and 100 girls were taken as its sample. The experimental group consisted of 50 boys and 50 girls, and the control group likewise included 50 boys and 50 girls. The two groups showed statistical equivalence on the Mathematics Self-Efficacy Scale (MSES) during pre-test analysis which showed $t = 0.62$ and p value greater than 0.05 before the start of the intervention.

6.3 Intervention: Flipped Teaching Plan

The structured flipped teaching plans were developed to teach two units of the XI standard mathematics curriculum which include set theory and relations and functions with 10 and 9 pre-class video lessons respectively. The pre-class resources included content videos, power-point presentations, and text-based learning materials.

The classroom sessions used active, collaborative learning methods to teach students through problem-solving activities, peer teaching sessions, group discussions, collaborative learning activities, and exercises which followed Bloom's taxonomy from knowledge to understanding to application to

analysis. The student evaluation process used worksheets, open-ended questions, quizzes, peer assessments, open-book tests, and diagram-labelling tasks.

6.4 Tool Used

Mathematics Self-Efficacy Scale (MSES): The study used a validated 55-item scale with a maximum possible score of 275 to assess students' attitudes toward mathematics. The scale measures four key components: mathematics confidence (15 items), motivation and effort (15 items), anxiety and stress (15 items, reverse-scored), and goal orientation and mastery (10 items). The instrument showed outstanding reliability through its measurement see cronbach's alpha value which reached 0.91.

6.5 Data Analysis

The researchers conducted data analysis through independent samples t-tests which examined post-test means and gain scores of the experimental group (EG) and control group (CG). The researchers conducted a two-way ANOVA to study how teaching methods interacted with student gender. The researchers used Cohen's d to determine effect sizes. The researchers verified parametric test suitability by testing score distributions which showed all p-values remained above 0.05.

7. Results and Discussion

7.1 Pre-test Equivalence

The experimental group (EG) and control group (CG) showed equal results during the pre-test assessment. The mean MSES scores were similar for both groups (EG: 142.36; CG: 140.88), and the difference was not statistically significant ($t = 0.62$, $p > 0.05$). The data displayed normal distribution because both skewness and kurtosis values stayed within the range of ± 1.0 . The results proved normality assumption and they validated the application of parametric statistical methods.

7.2 Mathematics Self-Efficacy Outcomes

Post-test analysis revealed highly significant differences between the EG and CG on mathematics self-efficacy outcome. Table 1 summarises the key result.

Table 1: Summary of Post-test Scores

Measure	Group	Pre-test Mean	Post-test Mean	Mean Gain	Cohen's d
Mathematics Self-Efficacy (MSES / 275)	Experimental	142.36	188.72	46.36	2.85
	Control	140.88	151.74	10.86	—

Significant at $p < 0.01$.

The experimental group (EG) posted a post-test mean score of 188.72 on the MSES while the control group (CG) reached a score of 151.74. The difference between the two groups showed statistical significance ($t = 16.95$, $p < 0.01$) and displayed an extremely large effect size ($d = 2.41$) which demonstrated significant real-world impact.

The gain score analysis showed an even bigger effect which reached its highest point at ($d = 2.85$) during the entire study. The findings demonstrate that flipped teaching produced a strong effect on students' self-efficacy in mathematics.

7.4 Self-Efficacy Component Analysis

Table 2: Component-wise Summary of MSES -Experimental and Control Groups

Component	EG Pre	EG Post	EG Gain	CG Pre	CG Post	CG Gain	Max	EG %	t (Post)	Cohen's d
Maths Confidence	40.95	55.18	14.23	40.03	44.87	4.84	75	73.57%	19.73**	1.61
Motivation & Effort	39.82	50.34	10.52	39.09	40.93	1.84	75	67.12%	17.46**	1.39
Anxiety & Stress	33.58	43.16	9.58	33.55	34.48	0.93	75	57.55%	15.84**	1.53
Goal Orientation	28.01	40.04	12.03	28.21	31.46	3.25	50	80.08%	18.37**	1.72
Total MSES	142.36	188.72	46.36	140.88	151.74	10.86	275	68.63%	22.43**	2.41

The analysis revealed that all four MSES components experienced significant improvements when flipped teaching was implemented. The experimental group (EG) showed a 14.23-point increase in Mathematics Confidence while the control group (CG) showed a 4.84-point increase which resulted in a ($d = 1.61$) value that showed students developed stronger confidence in their ability to solve mathematical challenges. The EG achieved a 10.52-point increase for motivation and effort while the CG earned 1.84 points which resulted in a ($d = 1.39$) value that demonstrated students who participated in the flipped classroom showed higher dedication to completing their mathematical work than their peers. The anxiety and stress component showed a proportional difference which stood out as one of the major results since the EG group showed an improvement which achieved 10.3 times higher than the CG group ($d=1.53$). Researchers discovered that students who watched instructional videos by themselves before class showed less performance anxiety which usually occurs during first-time learning sessions in typical classroom environments. Goal orientation and mastery achieved 80.08% as its highest post-test percentage while it produced the largest gain effect size among subcomponents at ($d = 1.72$) which demonstrated students developed intrinsic motivation together with mastery-based learning.

7.5 Gender-wise Analysis

Table 3: MSES Post-test Score Comparisons

Comparison of Groups	N	Mean	SD	N	Mean	SD	t-value	Cohen's d
EG Boys vs CG Boys	50	186.84	14.36	50	149.68	17.04	11.79**	2.36
EG Girls vs CG Girls	50	190.58	13.28	50	153.82	16.62	12.22**	2.44
EG Boys vs EG Girls (Gender)	50	186.84	14.36	50	190.58	13.28	1.35 (NS)	0.27

The analysis of gender differences demonstrated that flipped teaching created equal educational results for male and female students. The EG Boys had a mean of 186.84 ($SD = 14.36$) vs. CG boys at 149.68 ($SD = 17.04$), with $t = 11.79$ and $d = 2.36$. EG girls had a mean of 190.58 ($SD = 13.28$) vs. CG Girls at

153.82 (SD = 16.62), with $t = 12.22$ and $d = 2.44$. The research showed no difference between boys and girls in the experimental group ($t = 1.35$, $p > 0.05$; $d = 0.27$) because both genders received equal advantages from the program.

The two-way ANOVA analysis showed that teaching method and gender did not create any statistically significant interaction effect on MSES scores ($F = 0.42$, NS). The findings demonstrate that flipped teaching functions as a gender-inclusive teaching method which provides equal educational advantages to male and female students.

8. Findings of the Study

The study results demonstrate both strong consistency and high impact across all research findings. The experimental group which experienced flipped teaching showed superior results to the control group across all tested areas including self-efficacy measurements and gender differences. The effect sizes represent much greater effect sizes than researchers usually report in studies that compare different teaching methods for secondary mathematics. The current study results offer one of the strongest scientific proofs that flipped teaching works effectively in Indian secondary educational institutions.

The theoretical alignment of these findings is equally noteworthy. Albert Bandura's social cognitive theory (1986, 1994) explains that learning environments achieve optimal effectiveness when they develop self-efficacy through four essential mechanisms which include mastery experiences and vicarious learning and social persuasion and anxiety reduction. The flipped teaching model implemented in this study systematically activated each of these processes. The students accomplished learning through collaborative classroom activities which built their skills while peer teaching enabled them to learn from each other as teachers provided continuous feedback which acted as social persuasion to help students learn at their own pace through pre-class videos which created a low-anxiety environment for studying new material.

The experimental group showed 10.3 times greater improvement in the anxiety and stress component which produced significant evidence to support the theoretical explanation.

The confirmed gender neutrality of flipped teaching represents a significant equity-related finding. Indian secondary school mathematics learning throughout history has developed through gender-based differences which affected student confidence and classroom participation. Research by Claude Steele and Joshua Aronson (1995) demonstrates how stereotype threat negatively impacts performance and self-beliefs of marginalized groups.

The present finding that flipped teaching produced equivalent outcomes for both male and female students with no significant teaching method \times gender interaction shows that the model's structural features promote gender-inclusive learning. The pre-class video component which reduces anxiety together with the peer-supported in-class environment creates spaces where both boys and girls can participate in mathematical content learning.

9. Educational Implications

For Teachers: Educators should create brief video lessons which last between eight and twelve minutes to teach knowledge and understanding content. The classroom time needs to be used for advanced learning activities which include application and analysis through peer teaching and think-pair-share and collaborative problem-solving activities. The use of low-stakes assessments which occur throughout the learning process can help students learn better while decreasing their anxiety about taking tests.

For Curriculum Developers: Mathematics textbooks should integrate QR codes or web links that connect students to high-quality pre-class instructional videos. Exercise sets require systematic

scaffolding from basic understanding to advanced reasoning abilities which should be developed through Bloom's taxonomy levels. The 5E instructional framework -engage, explore, explain, elaborate, and evaluate offers a coherent structure for designing flipped learning units which naturally align with inquiry-based and student-centred pedagogies.

For Policy Makers: Rural and semi-urban secondary schools need strategic ICT infrastructure investment because it provides equal access to flipped teaching. Professional development initiatives should include structured training in digital content creation, interactive classroom facilitation, and formative assessment design. The evaluation systems need to establish student-centred classrooms with active discussions as high instructional quality indicators which will motivate teachers to develop their teaching methods.

10. Conclusion

The experimental research proves flipped teaching to be a revolutionary method for teaching mathematics in secondary schools. The students who learned through the model developing stronger self-belief in their mathematical abilities than the students who received traditional teaching methods. The effect sizes which reach large educational research standards show academic results that have both statistical significance and educational value. The model proved effective across different content units while Pearson assessment tests and both male and female students showed its equal educational benefits for both genders.

The anxiety and stress component of self-efficacy experienced major improvement because flipped teaching brought about 4.18 times better performance results. Flipped teaching improves student performance while making students develop better emotional connections with their mathematics studies. The model helps students build academic resilience by reducing their anxiety and developing self-confidence in their mathematical abilities.

Flipped teaching provides a correct pedagogical solution which scientific research backs up and which teachers can implement in their classrooms to solve the two major problems which face secondary mathematics education in India. The approach needs three elements to succeed: sustained support from educational institutions combined with professional development for teachers and dedicated funding for information and communication technology infrastructure. The approach will become the main way of teaching secondary mathematics because it will boost student test results and change their entire experience of learning mathematics through information about their ability to succeed.

Acknowledgement: We sincerely express our gratitude to Govt. of Uttar Pradesh for their generous support in our project entitled- "Effect of Flipped Teaching on Academic Performance and self -Efficacy of Secondary Students in Mathematics" under Research and development Scheme in the year 2023-24. We also thank our project team for their invaluable dedication, and contributions that made this work possible.

References

1. Afaf, A. S. (2017). The effect of flipped classroom strategy on academic achievement and self-efficacy at College of Education, Princess Nourah bint Abdulrahman University. *International Journal of Education and Social Science*, 4(12), 37–47.
2. Akçayır, G., & Akçayır, M. (2018). The flipped classroom: A review of its advantages and challenges. *Computers & Education*, 122, 334–345.
3. AlJaser, A. M. (2017). Effectiveness of flipped classroom strategy in academic achievement and self-efficacy among education students of Princess Nourah bint Abdulrahman University. *English Language Teaching*, 10(4), 67–77.
4. Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. Longman.
5. Asfaw, M. D. (2022). Assessment on students' self-efficacy, academic achievement, locality and gender in chemistry at Woreillu Secondary School, Ethiopia. *Journal of Education and Practice*, 13(6), 22–30.
6. Ashcraft, M. H., & Krause, J. A. (2007). Working memory, math performance, and math anxiety. *Psychonomic Bulletin & Review*, 14(2), 243–248.
7. Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.
8. Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71–81). Academic Press.
9. Bergmann, J., & Sams, A. (2012). *Flip your classroom: Reach every student in every class every day*. International Society for Technology in Education.
10. Bhagat, K. K., Chang, C. N., & Chang, C. Y. (2016). The impact of the flipped classroom on mathematics concept learning in high school. *Educational Technology & Society*, 19(3), 134–142.
11. Birundha, S., & Manoharan, C. (2020). Effectiveness of flipped classroom teaching for Organic Chemistry to Standard XI students. *Journal of Critical Reviews*, 7(14), 1451–1459.
12. Bishop, J. L., & Verleger, M. A. (2013, June). The flipped classroom: A survey of the research [Paper presentation]. ASEE Annual Conference & Exposition, Atlanta, GA, USA.
13. Cascolan, H. M. S. (2023). Effects of flipped classroom on the academic performance, self-efficacy, and metacognitive skills of chemistry students. *Journal of Positive School Psychology*, 7(3), 884–895.
14. Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.
15. Dove, A., & Norris, A. (2018). The flipped classroom: Strategies and technologies for higher education. *International Journal of Teaching and Learning in Higher Education*, 30(1), 63–77.
16. Hackett, G., & Betz, N. E. (1989). An exploration of the mathematics self-efficacy/mathematics performance correspondence. *Journal for Research in Mathematics Education*, 20(3), 261–273.
17. Hamdan, N., McKnight, P., McKnight, K., & Arfstrom, K. M. (2013). *A review of flipped learning*. Flipped Learning Network.
18. Jamil, N. L., & Mahmud, S. N. D. (2018). The relationship of science self-efficacy and academic performance in secondary school students. *Jurnal Pendidikan Sains & Matematik Malaysia*, 8(2), 19–28.

19. Kolmogorov, A. N. (1933). Sulla determinazione empirica di una legge di distribuzione. *Giornale dell'Istituto Italiano degli Attuari*, 4, 83–91.
20. Love, B., Hodge, A., Grandgenett, N., & Swift, A. W. (2014). Student learning and perceptions in a flipped linear algebra course. *International Journal of Mathematical Education in Science and Technology*, 45(3), 317–324.
21. Malhotra, A. S., & Bhagat, A. (2022). Readiness for flipped classroom in India: A pilot study with first-year undergraduate medical students. *Medical Science Educator*, 32(1), 45–53.
22. Pajares, F., & Miller, M. D. (1994). Role of self-efficacy and self-concept beliefs in mathematical problem solving: A path analysis. *Journal of Educational Psychology*, 86(2), 193–203.
23. Schunk, D. H. (1996). Goal and self-evaluative influences during children's cognitive skill learning. *American Educational Research Journal*, 33(2), 359–382.
24. Shapiro, S. S., & Wilk, M. B. (1965). An analysis of variance test for normality (complete samples). *Biometrika*, 52(3–4), 591–611.
25. Stanberry, M. L., & Payne, W. R. (2018). Active learning in STEM education: A review of the empirical literature and implications for teaching. *Journal of STEM Education: Innovations and Research*, 19(1), 5–12.
26. Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, 69(5), 797–811.
27. Usher, E. L., & Pajares, F. (2009). Sources of self-efficacy in mathematics: A validation study. *Contemporary Educational Psychology*, 34(1), 89–101.
28. Wei, X., Cheng, I.-L., Chen, N.-S., Yang, X., Liu, Y., Dong, Y., Zhai, X., & Kinshuk. (2020). Effect of the flipped classroom on the mathematics performance of middle school students. *Educational Technology Research and Development*, 68(3), 1461–1484.
29. Zheng, L., Bhagat, K. K., Zhen, Y., & Zhang, X. (2020). The effectiveness of the flipped classroom on students' learning achievement and learning motivation: A meta-analysis. *Educational Technology & Society*, 23(1), 1–15.
30. Zimmerman, B. J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. *American Educational Research Journal*, 29(3), 663–676.