International Journal of Religion
2024
Volume: 5| Number 6 | pp. 252 – 260
ISSN: 2633-352X (Print) | ISSN: 2633-3538 (Online)
ijor.co.uk
DOI: https://doi.org/10.61707/eechjm13

The Impact of Small-Group Peer Learning on High School Students' Social-Cognitive Outcomes

Irwanto Irwanto[1], Yolanda Devi Suci Andjani[2] and Elma Suryani[3]

Abstract

This research aims to investigate the effect of small-group peer learning (SGPL) on 10th-grade students' social cognitive outcomes (SCO). Seventy-two students who were selected as samples attended the chemistry subject for five weeks in a public high school in Jakarta, Indonesia. In a quasi-experimental design, two intact classes were recruited and randomly assigned as the experimental and control groups by flipping a coin. Students' SCO was obtained from the Social Cognitive Outcomes Questionnaire (SCOQ). The SCOQ consisted of 3 constructs: self-efficacy (8 items), self-regulation (10 items), and avoidance of unrelated memorizing (3 items). The obtained data was analyzed using an independent sample t-test and paired sample t-test. The result of the t-test revealed that SGPL has positive effects on students' SCO. It can be concluded that there is a positive effect of SGPL on students' SCO. In other words, SGPL is effective in developing students' social cognitive outcomes. Based on this finding, teachers are recommended to use the SGPL method in order to promote students' SCO.

Keywords: *Collaborative Learning, Chemistry, Peer-Learning, Social-Cognitive Outcomes*

INTRODUCTION

Social-cognitive theory describes human behavior where humans can learn by adapting their surroundings such as observing and choosing which behavior is enviable (Bandura, 1997; Zimmerman, 2013). Social-cognitive theory in education is referred to as learning in the social environment (Schunk & Usher, 2012). Social-Cognitive Outcomes (SCO) have three domains namely self-efficacy, avoidance of unrelated memorization, and self-regulation. These three domains will help students in entering college life (Micari & Pazos, 2020). Prior research had revealed how these domains are related to each other where high self-efficacy can influence students' self-regulation, with the result that students are able to avoid surface approach unrelated memorizing. The three domains also explain how they can influence learning effectiveness and students' performance in learning (Liu et al., 2015). However, existing evidence shows that the three domains of SCO need to be improved (Schuitema et al., 2012; Van der Veen & Peetsma, 2009; Vansteenkiste et al., 2009; White & DiBenedetto, 2018; Liu et al., 2015). Previous studies have indicated that high school students often exhibit the lowest levels of self-efficacy in science (Eccles et al., 1997). Consequently, many students opt not to pursue further studies in science after graduating from high school, and their science self-efficacy tends to decline over time (Larose et al., 2006). Moreover, students' self-regulation tends to decrease during the initial year of secondary education (Van der Veen & Peetsma, 2009; Schuitema et al., 2012), with further declines observed as students progress through higher grade levels (Vansteenkiste et al., 2009). Consequently, addressing low science self-efficacy is imperative and warrants both improvement efforts and ongoing evaluation.

LITERATURE REVIEW

Self-Efficacy

According to Bandura (1997), self-efficacy refers to an individual's belief in their capability to perform effectively in specific situations. In an academic context, self-efficacy pertains to one's belief in their ability to succeed in a particular subject. Schunk and DiBenedetto (2016) further elaborate that self-efficacy influences various behaviors such as effort exertion, persistence, task selection, and the adoption of effective learning

[1] Ph.D; Department of Chemistry Education, Universitas Negeri Jakarta, Jakarta 13220, Indonesia. E-mail: irwanto@unj.ac.id, ORCID: 0000-0001-5842-5931

[2] B.Ed; Department of Chemistry Education, Universitas Negeri Jakarta, Jakarta 13220, Indonesia. E-mail: yolandadevi007@gmail.com
[3] M.Ed; Department of Chemistry Education, Universitas Negeri Jakarta, Jakarta 13220, Indonesia. E-mail: elmasuryani2016@gmail.com

strategies. When a student possesses high self-efficacy, they are more likely to feel motivated to excel in academic endeavors and demonstrate persistence in tackling challenges or problem-solving tasks. Students with high self-efficacy will also select certain learning strategies to support their metacognitive needs in understanding the materials they are studying (Micari & Pazos, 2020). On the other hand, students who have low self-efficacy tend to avoid tasks that are considered difficult and do not exert effort to complete the task (Anderman & Wolters, 2006; Bandura, 1977; Joët et al., 2011; Schunk, 2012; White & DiBenedetto, 2018).

Self-Regulation

Self-regulation entails the capacity to manage and control one's own behavior and cognitive processes. In an educational context, self-regulation refers to students' ability to autonomously organize their learning processes. This includes their willingness to engage in specific activities aimed at achieving learning objectives, their ability to structure tasks, their readiness to evaluate their progress, and their inclination to rectify mistakes during the learning process (Caprara et al., 2008; Mega et al., 2014). Students with high self-regulation abilities are often cognizant of the significance of learning and exhibit proactive behaviors towards their academic endeavors (Lin, 2018). On the other hand, students who have low self-regulation are unable to regulate their own learning patterns. Other factors that influence low self-regulation are low independent learning patterns and low awareness of achieving learning goals from material (Asmamaw, 2018).

Avoidance of Unrelated Memorizing

Avoidance of unrelated memorizing actually roots from unrelated memorizing which can be elaborated as an activity where students only memorize things without actually understanding them deeply. When students are unable to understand the topic being discussed, unrelated memorization often occurs. This phenomenon can trigger a surface approach to learning where students only simply memorize the materials, with no reflections, and a lack of attention to understanding the fragments of the information in the materials. This kind of approach also often be associated with anxiety in learning. Apart from anxiety, the surface approach is also associated with ineffective learning and low academic performance (Biggs, 1993; Booth et al., 1999; Chin & Brown, 2000; Entwistle, 2000; Prosser & Trigerwell, 1999; Liu et al., 2015).

On the other side, a deep approach includes efforts to understand materials so one can understand the key concepts, actively getting involved in activities that can support deeper understanding and a big curiosity in linking parts of information that are related to the materials. This approach emphasizes and makes learning environments where students as learners and decreases competition between students. Thus, this approach is proven to produce more meaningful learning (Mazlum, 2015).

Previous research found ways to improve one of the SCO domains. Some unconventional learning methods from previous research have positive contribution to improving self-efficacy (Gormally et al., 2009; Sen & Vekli, 2016; Vishnumolakala et al., 2017) and self-regulation (Moote et al., 2013; Temel, 2013). Nevertheless, that research is more likely to be found in higher education (Ainscough et al., 2016; Baldwin et al., 1999; Uzuntiryaki & Aydin, 2009). Hence, the researcher desires to explore a method that is suitable to be implemented for high school students facing college life. The transition phase from high school to higher education will feel difficult if students gain only one of three domains of SCO. Thus, the right method needs to be applied in learning to improve all of the three domains of SCO. In this study, the researcher proposes Small-Group Peer-Learning (SGPL) as a method to improve students' SCO.

Small-Group Peer-Learning (SGPL)

The significance of this study is SGPL gives out facilities for students to improve their SCO. In SGPL, students are given the opportunity to work together in groups to solve complex problems. In groups, students play and switch roles as tutors and tutees. Tutors teach materials to tutees so that tutees can freely ask questions and deeply understand the materials (Cohen, 1994; Gordon, 2005). During SGPL, each group is administered to finish exercises by applying concepts they already studied with the tutors. SGPL facilitates a discussion room with peers with the aim for students to feel at ease in asking questions and not afraid of being wrong, so there is room for students to develop and make mistakes (Carey et al., 2018; Price & Whiteside, 2016; Tai et al., 2016).

With this opportunity, students' SCO such as self-efficacy and self-regulation can improve. Students will also minimize surface-level memorizing without any deeper understanding of the subject (unrelated memorizing).

The research question proposed in the current study is: *Is there an effect of SGPL on high school students' social-cognitive outcomes*?

METHODS

Research Design

In order to see the effect of SGPL on students' SCO, a quantitative method was used to retrieve the data. In this study, a quasi-experimental design with the pretest-posttest nonequivalent control group. According to Creswell (2012), this design is an approach where the researcher gives out both a pretest and posttest to the experimental group (EG) and control group (CG), gives treatment only to the EG, and gives out a posttest to both of the groups with the aim to calculate the difference between the two groups. The CG was not given the same treatment, rather they learned with a conventional method (Creswell, 2012).

Participants

Seventy-two students who participated in this research are from a public school in Jakarta in the 2nd semester of the 2022/2023 academic year. Each class consisted of 36 students with a total of 33 males and 39 females, aged 15-17 (M = 15.83; SD = 0.63). The two intact classes were randomly assigned as CG and EG by flipping a coin.

Research Instrument

Students' SCO was obtained from the Social Cognitive Outcomes Questionnaire (SCOQ). The SCOQ consisted of self-efficacy (8 items) and self-regulation (10 items) were adapted from MSLQ (Motivated Strategies for Learning Questionnaire; Pintrich et al., 1991). The third domain, avoidance of unrelated memorizing (3 items), was adapted from ASSIST (Approaches and Study Skills Inventory for Students; Entwistle, 2013). Each adapted instrument used a 5-level Likert scale. It should be noted that "5" indicates strongly agreed and "1" indicates strongly disagreed. The maximum score was 105 and the minimum score was 21. Cronbach's alpha of reliability coefficient was 0.904.

Procedure

Data collection was conducted after receiving written permission from the principal of SMAN 65 Jakarta, the vice principal, and the subject teacher. At the beginning of the instruction, The SCOQ was administered to both of the groups. SCOQ was used to identify students' SCO before the instruction began. Then, the two groups received different treatments from the second author as the instructor. Each class has a 90-minute session per week in the academic year of 2022/2023. The topic learned during the instruction was chemical nomenclature. The EG studied with SGPL, whereas the CG studied with the cooperative learning method. By the end of the instruction, SCOQ was administered once again as a posttest. Students' SCO was analyzed later on.

Instruction in the Experimental Group

EG students studied by using SGPL; a student-centered method that utilizes peer tutors. At the beginning, the researcher divided students into six home base groups consisting of six students. Each group consisted of one tutor and five tutees. The researcher then gave out worksheets to each group and assigned them to work on them in groups. During this activity, students shared workloads to fill the worksheet. After filling out the worksheet, tutors are assigned to explain the concepts and connect the fragments of the material being discussed to tutees. Tutors also needed to give examples by applying the key concepts to solve the stated problem in the worksheet. Moreover, the tutor was also assigned to recommend the easiest way to understand the concept to tutees. After both the tutor and tutees deeply understood the material, the researcher asked every group to explain their own assigned materials in front of the class. Then, the researcher gave confirmations, feedback, and affirmations.

In the next session, tutees were asked to visit the other group (the visiting group) that had been organized by the researcher, while tutors stood by the home base. Tutees needed to learn and take notes on the materials that were being discussed in their visiting group with the help of tutees' worksheet. Tutors from each home base were assigned to explain their materials to the new tutees from different groups. Tutors were also assigned to recommend the easiest way to understand the materials deeply with the aim of aiding the tutees in understanding the material easily. After this visiting activity, tutees were asked to go back to their home base. In this activity, tutees and tutors switched roles. Tutees are now assigned to explain the materials they had learned from their group visit and explain the way they were taught by the other tutor on how to understand the concept as easily as possible. By the end of this session, the researcher picked a random tutee from each group to solve one problem from the worksheet on the whiteboard and explain their answer in front of the class. After that, the researcher gave confirmations, feedback, and affirmations.

Instruction in the Control Group

Students in the CG studied the same topic but with a different method which is cooperative learning. They were given the same worksheet as the one given to the EG. On the first day of instruction, divided students into 6 groups consisted of 6 students and gave out worksheets to each group to aid them in understanding their assigned materials. After the students finished, they were assigned to present their findings about their materials in front of the class. Next, the researcher began the questions and answers activity for students to propose questions in order to trigger arguments. After this activity ended, the researcher gave confirmations, feedback, and affirmations.

In the next session, the researcher asked the students to continue the presentation activity and the questions and answers activity. After that, the researcher instructed the students to do the exercise in groups. The researcher then picked a random student from each group to solve one of the problems on the whiteboard and explain it in front of the class. Later on, the researcher gave confirmations, feedback, and affirmations.

Data Analysis

In this study, inferential statistics were utilized to analyze the collected data. An independent t-test was employed to compare the pretest and posttest scores between the CG and EG. Additionally, a paired-sample *t*-test was conducted to compare the scores within each group before and after the intervention. Prior to conducting parametric tests, the normality of the data was assessed using the Kolmogorov-Smirnov test. The results indicated that the data followed a normal distribution ($p > .05$). A significance level of .05 was established using SPSS 25. Moreover, the effect size, which measures the magnitude of intervention effectiveness, was categorized as small ($d = 0.20$), medium ($d = 0.50$), and large ($d = 0.80$) based on Cohen's (2007) criteria.

RESULTS

Students' SCO was obtained from the score of SCOQ. The independent *t*-test was employed to compare SCO scores between students from the CG and EG. The comparison of the pretest between CG and EG is illustrated as follows in Table 1.

Table 1. The differences in pretest between CG and EG

Domain	Group	N	*M*	*SD*	*t*	*p*
Self-Efficacy	CG	36	3.482	1.051	0.516	0.608
	EG	36	3.364	0.883		
Self-Regulation	CG	36	3.377	1.022	-0.251	0.802
	EG	36	3.430	0.737		
Avoidance of Unrelated Memorizing	CG	36	2.768	0.918	-0.295	0.769
	EG	36	2.833	0.947		
Overall SCO	CG	36	3.330	0.876	0.059	0.953
	EG	36	3.320	0.629		

Based on Table 1, there is no difference in students' SCO between the CG (M = 3.330*; SD* = 0.876) and the EG (M = 3.320*; SD* = 0.629). Overall, there isn't any statistically significant gap between the two groups (t = 0.059; p = 0.953). Therefore, it can be concluded that students' SCO from the CG and EG are equivalent.

By the end of the instruction, a posttest was administered to both groups. The comparison of the mean from both groups is shown in Table 2.

Table 2. The differences in the posttest between the CG and EG

Domain	Group	N	M	SD	*t*	*p*
Self-Efficacy	CG	36	3.583	0.705	-2.379	0.020
	EG	36	3.975	0.693		
Self-Regulation	CG	36	3.430	0.664	-2.578	0.012
	EG	36	3.825	0.633		
Avoidance of Unrelated Memorizing	CG	36	2.527	0.806	-4.430	0.000
	EG	36	3.472	0.993		
Overall SCO	CG	36	3.359	0.537	-3.608	0.001
	EG	36	3.832	0.572		

Relatively, the results showed that there is a statistically significant gap between students' SCO from the CG and EG (t = 3.608; p = 0.001). A significant difference was also observed from the comparison of mean scores from all of the domains ($p < 0.05$). This states that students from the EG have more dominant SCO compared to the students from the CG.

A paired sample t-test was employed to explore if the gain of the experimental students' SCO mean score from the pretest and posttest is statistically significant. The result is displayed in Table 3.

Table 3. The difference between pretest and posttest from both groups

Domain	Group		M	SD	*t*	*p*	*d*
Self-Effiacy	CG	Pretest	3.482	1.051	-0.437	0.665	0.113
		Posttest	3.583	0.705			
	EG	Pretest	3.364	0.883	-2.981	0.005	0.769
		Posttest	3.975	0.693			
Self-Regulation	CG	Pretest	3.377	1.022	-0.260	0.797	0.061
		Postest	3.430	0.664			
	EG	Pretest	3.430	0.737	-2.274	0.029	0.563
		Posttest	3.825	0.633			
Avoidance of Unrelated Memorizing	CG	Pretest	2.750	0.934	0.705	0.485	0.161
		Posttest	2.607	0.833			
	EG	Pretest	2.812	0.918	-3.751	0.001	0.762
		Posttest	3.546	1.005			
Overall SCO	CG	Pretest	3.236	0.904	-0.158	0.875	0.040
		Posttest	3.263	0.659			
	EG	Pretest	3.210	0.718	-3.720	0.001	0.971

A paired-sample t-test was executed for each domain. The domain "Self-Efficacy" from the EG has the highest gain (d = 0.769), whereas the domain with the lowest gain is "Self-Regulation" (d = 0.563).

Overall, after treatment was given, experimental students' SCO scores were at a satisfactory level with a large effect size (d = 0.971). Table 3 indicates the statistically significant difference between pretest (M = 3.210; SD = 0.718) and posttest (M = 3.853; SD = 0.601) on experimental students' SCO (t = -3.720; p = 0.001; α = 0.05). Therefore, it can be said that there is a statistically significant difference between the pretest and posttest scores of the EG. Hence, it can be concluded that SGPL is able to improve students' SCO.

DISCUSSION

This research has successfully evaluated the effect of SGPL on students' SCO compared to cooperative learning. Before the intervention, students' pretest scores from both groups did not show any statistically significant differences. Hence, students from both groups had the same SCO. The independent t-test after the intervention resulted in those students from the EG who learned by using SGPL significantly gained higher

SCO compared to students who learned using cooperative learning. The results from the paired *t*-test showed a significant difference between experimental students' pretest and posttest SCO scores. Based on Cohen's *d,* SGPL gives positive influence in the form of improvement from the three domains of SCO with a large effect size.

These findings are parallel with previous research where it was said that peer learning and peer tutoring can improve some of the SCO domains. Learning with peer-tutoring and peer-learning are claimed to facilitate students to understand and explain concepts with great articulation so that it is effective in improving self-efficacy (e.g., Serap & Aktas, 2016; Shao & Kang, 2022; Watters & Ginns, 1997). In addition, peer-tutoring also promotes self-regulation because it can bring out students' initiation in organizing their own learning patterns independently (e.g., Ain et al., 2023; Fernandez-Martin et al., 2022; Rozendaal et al., 2003). Besides that, learning that promotes self-efficacy and self-regulation alongside the existence of small groups can promote avoidance of unrelated memorizing (e.g., Chiou et al., 2011; Micari & Pazos, 2020; Moote et al., 2013; Vishnumolakala et al., 2017) where reduction of surface-level memorization can result from the focus of learning carried out by small groups when understanding the concepts.

Contrasting things were found at the end of the instruction in the CG. Students did not experience any improvement in SCO significantly. This happened due to students' tendency to share tasks in searching for answers, but there was not any information exchange between peers. This activity caused students to only collect materials and understand their material individually without understanding their group mates' material. According to Magno (2009), this activity is caused by students' behavior that tend to do their work because they were told to do so, not because they understand that certain materials are important to be studied thus having the feeling of obligation to do the work. Students from the CG have not been able to arrange and organize their own learning patterns (Farooq et al., 2010). This appears to be caused by the inexistence of exchanging ideas/information between group mates, exchanging easy ways of learning, as well as students' initiation to propose questions in understanding concepts. This event can hinder students' ability to propose arguments and exchange thoughts (Vu, 1992; Zohar & Dori, 2003). According to Matsuyama et al. (2019), these obstacles can hinder students' self-regulation resulting in students' codependency with teachers. Students from the CG tend to memorize materials with a surface-level approach compared to students from the EG. A possible reason for this finding is that students who learned with a surface approach have limited mastery of the materials in accordance with what the teacher justified without any will to understand the concepts deeply. As a result, students memorize materials without paying good attention (Magno, 2009; Mammino, 2011; Schon 1984).

In summary, it can be concluded that students from the EG experienced higher SCO compared to students from the CG. This happened because students from the EG were asked to learn and discuss in small groups with their teammates who also played roles as tutors (SGPL). This finding is supported by the previous research conducted by Krestin et al. (2012) where students who often study by discussing and exchanging information with their teammates tend to pay sustainable attention to the focused materials. Also, tutors and their teammates can share and exchange information, and learning strategies, and give feedback to each other. Moreover, students who are in the same group also discussed new easy ways to understand the key concepts thoroughly. Thus, students experience improvements in self-regulation in reason to the existence of teamwork with tutors during the learning process. Students who work together in groups can also experience an improvement in affiliation (the level of friendship students feel for one another, such as knowing each other, helping each other with assignments, and enjoying working together) (the degree of friendship students feel for one another, such as knowing each other, helping each other with assignments, and enjoying working together) (Juvonen et al., 2012; Trickett & Moos, 1974). High affiliation can improve students' engagement in learning activities (Anderson et al., 2004). Small-group environments that are facilitated by peer tutors can help reduce students' anxiety when they make mistakes in public (in front of their teammates), and reduce pressure, and students' stress levels (Micari & Pazos, 2020). Students were more at ease to ask questions and were less afraid to make mistakes, so there was room for students to develop and make mistakes (Carey et al., 2018; Price & Whiteside, 2016; Tai et al., 2016).

CONCLUSION

In general, this research claims that SGPL is a better method to promote students' SCO compared to cooperative learning. Specifically, the research result reveals that SGPL is an effective collaborative learning method in developing students' SCO. In this study, SGPL facilitates students to have high SCO. More broadly, the usage of SGPL makes a positive contribution to preparing students to start college. Based on this benefit, SGPL should be included in the high school curriculum to help students have high self-efficacy and high self-regulation and be able to apply concepts when solving complex problems without utilizing surface-level memorization.

This research suffered from some limitations. The chemistry topic in this research is the nomenclature of chemical compounds. Thus, future research is encouraged to implement SGPL on other chemistry topics to receive more comprehensive results. The second limitation is related to the research duration. This research was held for five weeks and consisted of one session per week. The next research is recommended to analyze the effect of SGPL on SCO within a longer research duration to obtain more holistic results. The third one is related to the sample size. This research reached 72 samples in two classes at an Indonesian public high school. Further research is expected to reach out to larger sample sizes to gain more generalized results. Other than that, this study investigates SGPL on SCO using a quantitative research method. In order to triangulate data, future studies can use mixed methods to compare the results from the quantitative and qualitative aspects comprehensively.

Acknowledgment

We would like to express our gratitude to the Institute for Research and Community Service of Universitas Negeri Jakarta, Indonesia, for their support in facilitating this work.

REFERENCES

Ain, Q., Thurston, A., MacKenzie, A., & Ozkaya, C. (2023). What does previous research tell us about the effects of peer tutoring on metacognition in primary and secondary schools?. International Journal of Educational Research Open, 4, 1-9. https://doi.org/10.1016/j.ijedro.2023.100248

Ainscough, L., Foulis, E., Colthorpe, K., Zimbardi, K., Robertson-Dean, M., Chunduri, P., & Lluka, L. (2016). Changes in biology self-efficacy during a first-year university course. CBE Life Science Education, 15(2), 1-12. https://doi.org/10.1187/cbe.15-04-0092.

Anderman, E. M., & Wolters, C. A. (2006). Goals, values, and affect: Influences on student motivation. In P. A. Alexander & P. H. Winne (Eds.), Handbook of educational psychology (pp. 369-389). Mahwah, New Jersey: Lawrence Erlbaum Associates Publishers.

Anderson, A., Hamilton, R. J., & Hattie, J. (2004). Classroom climate and motivated behaviour in secondary schools. Learning Environments Research, 7(3), 211-225. https://doi.org/10.1007/s10984-004-3292-9

Asmamaw, A. (2018). Factors and influences of self-regulation learning among sport science undergraduate students in Ethiopian university. Research Journal of Social Science and Management, 8(7), 72-82.

Abbas, M., Jam, F. A., & Khan, T. I. (2024). Is it harmful or helpful? Examining the causes and consequences of generative AI usage among university students. International Journal of Educational Technology in Higher Education, 21(1), 10.

Baldwin, J. A., Ebert-May, D., & Burns, D. J. (1999). The development of a college biology self-efficacy instrument for nonmajors. Science Education, 83(4), 397-408. https://doi.org/10.1002/(SICI)1098-237X(199907)83:4%3C397::AID-SCE1%3E3.0.CO;2-%23

Bandura, A. & Adams, E. (1977). Analysis of self-efficacy theory of behavioral change. Cognitive Therapy and Research, 1(4), 287-310. https://doi.org/10.1007/BF01663995

Carey, C., Kent, B., & Latour, M. (2018). Experiences of undergraduate nursing students in peer assisted learning in clinical practice. JBI Database of Systematic Reviews and Implementation Reports, 16(5), 1190-1219. https://doi.org/10.11124/JBISR IR-2016-003295

Chiou, G., Liang, J., & Tsai, C. (2012). Undergraduate students' conceptions of and approaches to learning in biology: A study of their structural models and gender differences. International Journal of Science Education, 34(2), 167-195. https://doi.org/10.1080/09500693.2011.558131

Cohen, E. G. (1994). Restructuring the classroom: Conditions for productive small groups. Review of Educational Research, 64(1), 1-35. https://doi.org/10.2307/1170744

Creswell, J. W. (2012). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (4th Ed.). Boston, MA: Pearson Education, Inc

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., & Mac Iver, D. (1997). Development during adolescence: The impact of stage–environment fit on young adolescents' experiences in schools and in families (1993). In J. M. Notterman (Ed.), The evolution of psychology: Fifty years of the American Psychologist (pp. 475–501). American Psychological Association.

Entwistle, N., Tait, H., & McCune, V. (2000). Patterns of response to an approaches to studying inventory across contrasting groups and contexts. European Journal of Psychology of Education, 15(1), 33-48. https://doi.org/10.1007/BF03173165

Fernandez-Martin, F., Arco-Tirado, J., & Hervas-Torres, M. (2022). The impact of a peer-tutoring program to improve self-regulated learning. Anales de Psicologia, 38(1), 110-118. https://doi.org/10.6018/analesps.483211

Gordon, E. E. (2005). Peer tutoring: A teacher's resource guide. Toronto: Scarecrow Education.

Gormally, C., Brickman, P., Hallar, B., & Armstrong, N. (2009). Effects of inquiry-based learning on students' science literacy skills and confidence. International Journal For The Scholarship of Teaching and Learning, 3(2), 1-22. https://doi.org/10.20429/ijsotl.2009.030216

Jam, F., Donia, M., Raja, U., & Ling, C. (2017). A time-lagged study on the moderating role of overall satisfaction in perceived politics: Job outcomes relationships. Journal of Management & Organization, 23(3), 321-336. doi:10.1017/jmo.2016.13

Joët, G., Usher, E. L., & Bressoux, P. (2011). Sources of self-efficacy: An investigation of elementary school students in France. Journal of Educational Psychology, 103(3), 649-663. http://dx.doi.org/10.1037/a0024048

Juvonen, J., Espinoza, G., & Knifsend, C. (2012). The role of peer relationships in student academic and extracurricular engagement. In S. Christenson, A. Reschly, & C. Wylie (Eds.), Handbook of Research On Student Engagement. Boston: Springer. https://doi.org/10.1007/978-1-4614-2018-7_18

Krestin, H., Philip, H., Pollock., & Wilson, B. (2012). Assessing student perceptions of the benefits of discussions in small-group, large-class, and online learning contexts. College Teaching, 60(2), 65-75. https://doi.org/10.1080/87567555.2011.633407

Larose, S., Ratelle, C. F., Guay, F., Senécal, C., & Harvey, M. (2006). Trajectories of science self-efficacy beliefs during the college transition and academic and vocational adjustment in science and technology programs. Educational Research and Evaluation, 12(4), 373–393. https://doi.org/10.1080/13803610600765836

Lin, J.-W. (2018). Effects of an online team project-based learning environment with group awareness and peer evaluation on socially shared regulation of learning and self-regulated learning. Behaviour & Information Technology, 37(5), 1-17. http://dx.doi.org/10.1080/0144929X.2018.1451558

Liu, E. S., Carmen, J. Y., & Yeung, D. Y. (2015). Effects of approach to learning and self-perceived overall competence on academic performance of university students. International Journal of Education Economics and Development, 11(4), 420-443. http://dx.doi.org/10.1016/j.lindif.2015.03.004

Magno, C. (2009). Self-regulation and approaches to learning in English composition writing. TESOL Journal, 1, 1-16.

Mammino, L. (2011). Teaching chemistry in a historically disadvantages context: Experiences, challenges, and inferences. Journal of Chemical Education, 88(11), 1451-1453. https://doi.org/10.1021/ed2000236.

Matsuyama, Y., Nakaya, M., Okazaki, H., Adam, L., Jimmie, L., & Cees V. (2019). Does changing from a teacher-centered to a learner-centered context promote self-regulated learning: A qualitative study in a Japanese undergraduate setting. BMC Medical Education, 19(152), 1-12. https://doi.org/10.1186/s12909-019-1550-x.

Micari, M., & Pazos, P. (2020). Beyond grades: Improving college students' social-cognitive outcomes in STEM through a collaborative learning environment. Learning Environments Research, 24(1), 123-136. https://doi.org/10.1007/s10984-020-09325-y.

Moote, J. K., Williams, J. M., & Sproule, J. (2013). When students take control: Investigating the impact of the CREST inquiry-based learning program on self-regulated processes and related motivations in young science students. Journal of Cognitive Education and Psychology, 12(2), 178-196. http://dx.doi.org/10.1891/1945-8959.12.2.1

Farooq, A. J., Akhtar, S., Hijazi, S. T., & Khan, M. B. (2010). Impact of advertisement on children behavior: Evidence from pakistan. European Journal of Social Sciences, 12(4), 663-670.

Pintrich, P. R., Smith, D., Garcia, T., & McKeachie (1991). A manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ). Washington, DC: Office of Educational Research and Improvement. http://dx.doi.org/10.13140/RG.2.1.2547.6968

Price, D. & Whiteside, M. (2016). Implementing the 2:1 student placement model in occupational therapy: Strategies for practice. Australian Occupational Therapy Journal, 63(2), 123-129. https://doi.org/10.1111/1440-1630.12257.

Qamar, N., Zia, M., & Khan, T. (2019). De-Constructing Conjugal Rights in Pakistani Law. Legal Aid Society, 1-45.

Rozendaal, J., Minnaert, A., & Boekaets. (2003). Motivation and self-regulated learning in secondary vocational education: Information-processing type and gender differences. Learning and Individual Differences, 13(4), 273-289. http://dx.doi.org/10.1016/S1041-6080(03)00016-5.

Schon, D. A. (1984). The reflective practitioner: How professionals think in action. Washington: Basic Books.

Schuitema, J., Peetsema, T., & Van der Veen, I. (2012). Self-regulated learning and students' perceptions of innovative and traditional learning environments: A longitudinal study in secondary education. Education Study. 38, 397-413. https://doi.org/10.1080/03055698.2011.643105.

Schunk, D. H. & Usher, E. L. (2012). Social cognitive theory and motivation. In Ryan R. M. (Ed.), The Oxford handbook of human motivation (pp. 13-27). Oxford: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780195399820.013.0002

Sen, C. & Sezen, G. (2016). The impact of inquiry based instruction on science process skills and self-efficacy perceptions of pre-service science teachers at a university level biology laboratory. Universal Journal of Educational Research, 4(3), 603-612. http://dx.doi.org/10.13189/ujer.2016.040319

Serap, Y & Aktas, E. (2016). The effect of peer tutoring on university students' success, speaking skills and speech self-efficacy in the effective and good speech course. Educational Research Review, 11(11), 1035-1042. http://dx.doi.org/10.5897/ERR2016.2718.

Shao, Y. & Kang, S. (2022). The association between peer relationship and learning engagement among adolescents: The chain mediating roles of self-efficacy and academic resilience. Frontiers in Psychology, 13, 1-13. https://doi.org/10.3389/fpsyg.2022.938756

Singh. (2006). Fundamental of research methodology and statistics. New Delhi: New Age International

Tai, J., Molloy, E., Haines, T., & Canny, B. (2016). Same-level peer-assisted learning in medical clinical placements: A narrative systematic review. Medical Education, 50(4), 469-484. https://doi.org/10.1111/medu.12898

Temel, S. (2013). The effects of problem-based learning on self-regulated learning skills and the variables predictive of these skills. Mediterranean Journal of Social Sciences, 4(14), 297–302. https://doi.org/10.5901/mjss.2013.v4n14p297.

Trickett, E. J., & Moos, R. H. (1995). Classroom environment scale manual: Development, applications, research. Austin, TX: Consulting Psychologists Press.

Uzuntiryaki, E. & Aydin, Y. C. (2009). Development and psychometric evaluation of the high school chemistry self-efficacy scale. Educational and Psychological Measurement, 69, 868-880. https://doi.org/10.1177/0013164409332213.

Van der Veen, I. & Peetsma, T. 2009. The development in self-regulated learning behaviour of first-year students in the lowest level of secondary school in the Netherlands. Learning and Individual Differences, 19(1), 34-46. http://dx.doi.org/10.1016/j.lindif.2008.03.001

Vansteenkiste, M., Sierens, E., Goossens, L., Soenens, B., & Dochy, F. (2009). The synergistic relationship of perceived autonomy-support and structure in the prediction of self-regulated learning. British Journal of Educational Psychology, 79(1), 57-68. https://doi.org/10.1348/000709908X304398

Vishnumolakala, V. R., Southam, D. C., Treagust, D. F., Mocerino, M., & Qureshi, S. (2017). Students' attitudes, self-efficacy and experiences in a modified process-oriented guided inquiry learning undergraduate chemistry classroom. Chemistry Education Research and Practice, 18(2), 340-352. https://doi.org/10.1039/C6RP00233A.

Vu, N., Barrows, H., Marcy, M., Verhulst, S., Colliver, J., & Travis, T. (1992). Six years of comprehensive, clinical, performance-based assessment using standardized patients at the Southern Illinois University School of Medicine. Academic Medicine, 67(1), 42-50.

Watters, J. & Ginns, S. (1997). Peer assisted learning: Impact on self-efficacy and achievement (Report No. 143). Chicago, Illinois: Author.

White, M. C. & DiBenedetto, M. K. (2018). Self-regulation: An integral part of standards based education. In D. H. Schunk & J. A. Greene (Eds.), Handbook of self-regulation of learning and performance (2nd Ed., pp. 208-222). New York: Routledge.

Zimmerman, B. J. (2013). From cognitive modeling to self-regulation: A social cognitive career path. Educational Psychologist. 48(3), 135-147. https://doi.org/10.1080/00461520.2013.794676

Zohar, A. & Dori, Y. (2003). Higher order thinking skills and low-achieving students: Are they mutually exclusive?. Journal of The Learning Sciences, 12(2), 145-181. https://doi.org/10.1207/s15327809jls1202_1