International Journal of Instruction *July 2025 ● Vol.18, No.3*
e-ISSN: 1308-1470 ● www.e-iji.net *p-ISSN: 1694-609X*
pp. 435-456

Article submission code: 20241203173759 Received: 03/12/2024 Revision: 28/02/2025 Accepted: 11/03/2025 OnlineFirst: 10/04/2025

Collaborative Scripts: A Scaffold to Enhance Research Self-efficacy and Intrinsic Motivation in Undergraduate Research Projects

Bothina Sayed Mahmoud Abdelshaheed
Assoc. Prof., English Department, College of Education, Majmaah University, Saudi Arabia, *b.abdelshaheed@mu.edu.sa*

Using experimental design, this study attempted to identify how collaboration may increase students' Research Self-Efficacy (RSE), promote Intrinsic motivation (IM) for doing research and IM for writing a research paper, and improve their academic writing during undergraduate research projects. A questionnaire that measures RSE and IM for doing research and writing a research paper was developed and applied twice to both the experimental group and the control group. To scaffold students' during the collaborative work, a collaborative script was developed and introduced to the experimental group only while the control group worked individually. Students' research papers were evaluated using an analytical rubric. To analyze data, a One-Way MANOVA and an Independent Samples t-test were conducted. The use of a collaborative script demonstrably enhanced participants' Research Self-Efficacy (RSE), and their Intrinsic Motivation (IM) for both writing and conducting research. This suggests that collaborative learning approaches can be highly effective in fostering confidence and engagement among students undertaking research projects. Furthermore, the collaborative script group significantly outperformed the individual learning group in terms of organization, language accuracy, and mechanics in their research papers. This highlights the potential of collaborative writing to improve the technical aspects of academic writing. The lack of a significant difference in content scores, however, indicates that collaborative learning may not directly enhance the generation of novel ideas, suggesting a need for complementary strategies to bolster content development in such instructional contexts. These results fill a critical gap and display the bi-directional relationship of collaboration between RSE and IM in undergraduate EFL programs. They confirm the need for conducting further research to probe into this area and its implications for educational practice.

Keywords: collaborative script, research self-efficacy, intrinsic motivation, doing research, academic writing

INTRODUCTION

Undergraduate research projects are academic initiatives required for graduation, serving as a culminating capstone experience reflecting students' acquired skills, knowledge, and values. These projects provide opportunities for original research, exploration of specific topics, and contributions to their field, simultaneously

Citation: Abdelshaheed, B. S. M. (2025). Collaborative scripts: A scaffold to enhance research self-efficacy and intrinsic motivation in undergraduate research projects. *International Journal of Instruction*, *18*(3), 435-456. https://doi.org/10.29333/iji.2025.18323a

uncovering students' abilities in analytical thinking, problem-solving, and the application of scientific research and its ethics. Projects vary widely, from scientific experiments and data analysis to literature reviews and creative works. Student Intrinsic Motivation (IM) and Research Self-Efficacy (RSE) are crucial for success in these complex tasks. While primarily studied in individual learning contexts (Chesnut, et al. 2015; Chumwichan, et al. 2016; Livinţi, et al. 2021), recent research also highlights the benefits of collaborative research in achieving learning objectives and mastering skills like critical thinking, academic writing, teamwork, and planning (Heinonen, et al., 2020).

The literature on academic writing highlights the importance of examining writing-specific constructs, such as self-efficacy, self-regulation, and writing motivation. This focus has led to the development and validation of tools specifically designed to measure these constructs in student writers (Santos & Alliprandini, 2023; Zimmerman & Risemberg, 1997; Bruning & Horn, 2000; Graham & Harris, 2000; Harris & Graham, 2009; Pajares, 2003; Bruning, et al.,2013). Collaborative scripts, in this context, are structured plans or guides provided externally to detail the steps and practices necessary for successful collaborative writing. They specify activities and their sequence, and may even assign roles, to support effective group work. Many collaboration scripts have been developed over the years to provide step-by-step procedures to structure collaborative processes, including enhancing small group discussions, argumentation quality, team skills, and the quality of collaboratively produced work (Van Dijk, et al., 2014; Kollar et al. 2006; King, et al., 1998; Stegmann, et al., 2007; Fischer, et al., 2013). However, few studies are aimed at facilitating the development of students' use of scripts for regulation of collaboration during writing research projects. While undergraduate research projects aim to develop students' research and writing skills, our observations reveal consistent weaknesses in specific areas, namely [mention the specific weaknesses, e.g., organization, clarity, mechanics] of the written research products. This suggests that current pedagogical approaches may not adequately address these essential skills. This study addresses this gap by evaluating the impact of a collaborative script designed to systematically improve these technical aspects of academic writing within a collaborative learning environment.

LITERATURE REVIEW

The Potential of Collaborative Writing

The social view of writing as a dynamic and adaptive set of practices necessitates its bonding forms of participation in the community of practices (Lave & Wenger, 1991). In their model, Lave & Wenger (1991) outlined a collaborative apprentice model in which much of the academic success could be partly attributed to interactions and informal support offered by more experienced members to novice ones in the academic community.

Recent research increasingly focuses on peer-assisted learning in writing, including collaborative writing, based on the premise that writing is a function of activity (Bommarito, 2015; Van Steendam et al., 2014). Any collaboration can offer better learning opportunities; collaborative writing specifically helps develop L2 students' creativity and critical thinking (Ebadi & Rahimi, 2018), improves written text quality

(Storch, 2005), and increases writing motivation (Miyazoe & Anderson, 2010). This interest stems from early findings highlighting the significance of collaborative writing in language learning tasks involving joint written texts (Swain & Lapkin 1995; Swain & Lapkins, 1998). Collaborative writing, defined as two or more writers producing a jointly written text, presents challenges in developing and conducting truly collaborative processes (Wichmann & Rummel 2013; Mayordomo & Onrubia, 2015; Heinonen, et al., 2020).

Collaborative writing has shown significant potential in enhancing student research by promoting critical thinking, teamwork, and synthesis skills. Studies indicate that students engaged in collaborative writing often develop a deeper understanding of complex concepts as they negotiate meaning, discuss ideas, and provide peer feedback. Collaborative writing helps students refine their arguments and consider diverse perspectives, strengthening their analytical skills (D'Angelo, 2016; Pham, 2023).

Investigating the potential of collaborative writing from varied perspectives revealed that most students are motivated by the opportunity to improve their writing skills through collaborative writing tasks. Moreover, collaborative writing proves effective in enhancing both the accuracy of student writing and critical thinking (Talib & Cheung, 2017).

Collaborative writing, grounded in Vygotsky's (1978) social constructivist theory, leverages the Zone of Proximal Development (ZPD) to foster learning. This approach emphasizes knowledge co-construction through peer interaction and dialogue (Wells, 1999). Within the ZPD, scaffolding and reciprocal teaching enable learners to build upon each other's strengths, with more knowledgeable peers supporting less experienced ones (Watanabe, 2015; Harris & Swain, 2001). Collaborative writing facilitates this process by encouraging meaningful discussions about language, structure, and content (Storch, 2013), providing opportunities for peer feedback and mutual support that strengthens understanding of writing conventions (Van Steendam et al., 2014). This aligns with research showing how peer interaction enhances language learning through knowledge co-construction and reciprocal scaffolding (Storch, 2013; Sato & Lyster, 2012; Tharp & Gallimore, 1988).

Collaborative Scripts

Co-constructing a text in collaborative research projects requires the teachers to do more than coordinate the writing tasks and distribute roles across group members. It necessitates providing scaffolding tools that structure and sequence collaborative work and guarantee regulation as an important factor for successful collaboration.

For this reason, there have been many attempts to promote learning and achievement by structuring collaborative work in groups to compel students to assume roles designated roles and follow the prescribed collaborative procedures (King, 2007; King, et al. 1998). Seminal work on one of these scaffolding tools was done earlier by Schank and Abelson (1977) who defined a script as “a standard event sequence” (p.38). They explained the notion of scripts from a cognitive psychology perspective as "structures that describe appropriate sequences of events in a particular context… predetermined stereotype with sequences of actions that define well-known situations” (p.41). The

script concept has appealed to later researchers who contributed to The Script Theory (Nelson, 1981; Collins, 1983; Hartup et al., 1983; King, 1997). In education, the concept of script is defined in light of its purpose as "prompting collaborating learners to focus on, remain engaged in, and regulate specific roles and actions" (King,1997, p.16).

Collaborative Scripts have received a growing interest among researchers and educators as didactic scenarios that guide and support groups of learners in collaborative learning (Lowry et al., 2004; Demetriadis & Karakostas, 2008; Fischer et al., 2013; De Wever et al., 2015), instructional support that generates high-level collaborative activity (Cole, 2009), strategies that bring about productive group processes and shared work (Kollar et al., 2006; Kobbe, et. al., 2007). Despite the potential of collaborative scripts, so far only a limited number of investigations have applied collaboration scripts in collaborative research projects (Lowry et al., 2004; Van Blankenstein et al., 2019; Heinonen, et al., 2020). Filling this gap, this study adapts a collaborative script to help students organize their collaborative writing process. It is based on the frames described by Lowry et al. (2004) and De Wever et al. (2015). The established framework that reflects the strong theoretical foundation of collaborative learning within Vygotsky's sociocultural, emphasizing the Zone of Proximal Development (ZPD) and the power of scaffolding directly informs the current investigation into the impact of collaborative scripts on undergraduate research projects. Specifically, collaborative scripts may offer scaffolding that supports students as they tackle the complex challenges of research. The structured steps and clear roles within a script can reduce anxiety, build confidence, increase RSE, and foster a sense of accomplishment and ownership, thereby boosting intrinsic motivation. The collaborative nature of the scripts further encourages peer support and feedback, creating a supportive learning environment conducive to increased engagement and motivation. Additionally, collaborative scripts may positively affect students' academic writing. The collaborative script's emphasis on structured processes, such as planning, drafting, revising, and editing, directly addresses the stages of academic writing. The provision of explicit guidelines and prompts within the script, coupled with opportunities for peer review and feedback, facilitates the development of well-structured arguments, clear writing style, and effective communication of research findings.

RSE

Livinţi, et al. (2021) described RSE as the adaptation of Self-Efficacy (SE) to the field of research. SE is defined by Bandura (1989) as having an adequate judgment of one's capability to complete assigned tasks, with emphasis on his possession of the necessary self-cognition to complete these assigned tasks. Thus, Bandura (1997) also identified four main sources of information that a person uses to assess his own SE; enactive mastery which represents the experience of success, a vicarious experience that represents observing and following a success model, social persuasion which represents coaching and learning realistically from others, and one's physiological and emotional state that represents the determiners of SE level. SE has been extensively researched within the realm of higher education showing that it relates positively to academic achievement (Bartimote-Aufflick et al. 2016; Diseth, et al., 2012; Graham & Weiner, 1996; Pintrich & Schunk, 1995; Richardson, et al., 2012; Stajkovic, et al., 2018;

Talsma, et al, 2018). In a study investigating current directions in self-efficacy research, Pajares (1997) showed that SE correlated with other constructs including test and domain-specific anxiety, self-regulation, goal setting, modeling, problem-solving, reward contingencies, social comparisons, strategy training, other self-beliefs and expectancy constructs, and varied academic performances across domains.

The literature revealed that RSE is predictive of many constructs like student's interest in conducting empirical research (Bishop & Bieschke 1998), increased scholarly (Kahn & Scott, 1997), and research productivity (Kahn, 2001; Morrison & Lent, 2014; Quimbo & Sulabo, 2014; Szymanski, et al., 2007). Having traced past results on research RSE in academic settings, it is clear that most of them have been attained with graduate students and specifically in contexts other than English language teaching. Accordingly, this study aims to draw on these results and investigate the effect of collaboration as a new direction in research on self-efficacy.

IM for doing research

Research on motivation for doing research focuses largely on raising interest. This is justified by the nature of the research process as being complex and needs to be requires internal motivation. IM is one of the fundamental concepts in education, referring to the drive that emanates from within the individual rather than external factors. This type of motivation expresses personal desire and will for achievement and development, reflecting dedication and active interest in the given task or activity. It represents what Ryan and Deci (2000b) called *innate inclination* that urges carrying out any activity for self-satisfaction and joy.

In their Self-Determination Theory, Ryan and Deci (2000b) identified three components that drive IM; a psychological need for competence, autonomy, and relatedness. Research demonstrates the significance of IM in supporting students to be more active and volitional (Ryan & Deci 2000a; Kusurkar et al., 2011). Other findings have marked IM in collaborative activities (Kramer & Kusurkar, 2017; Lawlor et al., 2016). Yet, the study of IM in linguistic research projects is still limited. Few investigations have been conducted (Wang & Hu, 2015; Van Blankenstein, et al., 2019). For doing research, IM is important and its components are deeply reflected in all tasks and activities. Feeling competent, autonomous, and related to others helps create success in doing research. In the context of research project students, intrinsic motivation holds particular significance. This form of motivation enhances personal motivation and the desire to achieve research goals. Internal motivation has a positive impact on academic achievement, as the student becomes more willing to dedicate the time and effort necessary to complete the research project. Additionally, internal motivation contributes to deepening understanding of the subjects and stimulates innovation and creativity in the research process.

Questions of the study

Research on how collaboration might help students get their first research experiences, gradually increase their self-efficacy and intrinsic passion for research, and produce well-written research papers is especially lacking. By tracking a cohort of students for a whole semester as they worked in groups on an undergraduate research project, this

study sought to close this gap. The collaborative script was given to half of the students to assess their impact on intrinsic motivation, self-efficacy, and academic writing. The study hypothesized that collaboration would develop intrinsic motivation and self-efficacy and improve academic writing. Accordingly, the study adopted two questions as follows:

(1) How does collaborative script help increase students' RSE and intrinsic motivation for research during undergraduate research projects?
(2) To what extent does collaborative script affect students' academic writing in undergraduate research projects?

METHOD

Participants

Seventy-eight female undergraduate students (aged 21-22) from the female campus of Majmmah University participated in the study. Participants were enrolled in a 'Research Projects' course, culminating in the writing and defense of a research paper.The study population consists exclusively of female students due to the practical constraints of conducting research solely within a female campus environment. While gender is not a variable in the analysis, previous research indicates it does not significantly impact RSE or research motivation (Phillips & Russell, 1994; Gelso, et al., 1996; Jones, 2006). Therefore, the homogenous gender composition of the sample does not affect the validity of the study's findings regarding the research questions. After consenting to participate in the treatment, students were randomly divided into two main groups; namely the experimental (collaborative) group (N=40) and the control (individual) group (N=38). The experimental group was divided into ten subgroups of four students, each supervised by a single instructor.Each sub-group was assigned a research topic from a predetermined list of topics and research designs. The control group students were supervised by two teachers, worked on their research projects, and wrote the research papers individually. The role of the teachers in the two main groups was to help students plan and conduct research, write the research paper, and defend the paper during the final discussion of the jury panel. Teachers tracked all students' progress by providing feedback on all the stages of doing research and writing the paper.

In both the experimental and control groups, teachers provided general guidance on research planning, paper writing, and presentation preparation. However, their roles differed significantly in their interaction with students. In the individual groups, teachers offered feedback on individual student work at each stage. This feedback focused on individual progress and challenges, with teachers providing direct support based on individual student needs. In the experimental subgroups, teachers played a more facilitative role, guided by the collaborative script and trained on its effective implementation. Before the study's commencement, teachers received specific training on the collaborative script, its underlying pedagogical principles, and strategies for effective facilitation. This training emphasized understanding the distinct roles within the script (writer, reviser, reviewer, editor, group leader) and how to support students in navigating those roles productively. Teachers observed group dynamics, intervening only to address significant challenges to collaboration, ensure adherence to the script's procedural steps, and offer prompts to encourage deeper engagement in the assigned

tasks. Their feedback remained focused on the group's collective progress, emphasizing collaborative processes rather than individual contributions. Regular observations allowed teachers to monitor the effectiveness of the collaborative script and provide targeted interventions when needed, thereby ensuring the groups remained on track and worked productively according to the script's intended steps. This approach contrasted sharply with the individual instruction used in the control group.

Material

Collaborative Script.

Based on the frames described by Lowry et al. (2004) and De Wever et al. (2015), this study presented a collaborative script to the experimental subgroups as a scaffold helping students to go through the collaborative writing in clear sequenced procedures. It provided specific instructions on how students do activities and execute writing stages. Before introducing it to the experimental subgroups, the script was evaluated by a group of faculty and students who did not participate in this study to judge its clearness and comprehensibility. As the Introduction, Method, Findings, and Discussion format is the standard format of research papers (Day & Gastel, 2012), the script divided the joint writing stages into five rounds naming Introduction, Method, Findings, Discussion, and Final Drafting. All subgroups worked concurrently and simultaneously on the same stages following the same rounds. Every stage started with a prewriting session in which all students brainstormed ideas and outlined the main elements of every section. In every round, each student was assigned to one of the four roles in the joint writing naming writer, reviser, reviewer, and editor. In every group, a student was selected as a group leader besides her role in the joint writing as illustrated in Table 1. To allow students to make their best contribution to the written paper, their roles have been changed over time from one round to another. Through the first to the fourth rounds, the leader designated herself and the three other students to their roles. The writer student in all subgroups who started writing the Introduction in 1st round has changed her role to be a reviser when writing the Method section in the 2nd round and vice versa as illustrated in Figure 1. This role rotation ensured each student fulfilled each role an equal number of times. In the 5th round, the four students in every subgroup had to perform as final editors of the final draft.

Table 1
Students' roles within collaborative subgroups

Role	Description
Leader	A student who contributes to the authorship of the research paper, reviews content, plans for activities, ensures collaboration, and motivates others toward the goals.
Writer	A student is responsible for writing a specific section of the research paper.
Reviser	A student who reorganizes paragraphs modifies the structure, perfects word choice, reduces redundancy, and fixes mechanics.
Reviewer	A student who provides specific content feedback and guidance to the editor. He isn't responsible for invoking the content changes, but he identifies the improvement areas and gives recommendations.
Editor	A student who reproduces the content, making both content and style changes highlighted by the reviewer. He ensures consistency and coherence across the content and ensures its alignment with goals.

Figure 1
Students Roles across writing stages, Adapted from De Wever et al. (2015)

To help this process truly constitute a collaborative writing intervention and not be akin to multiple rounds of peer review, the script limits the final version of the research paper to include a) an abstract of 150- 250 summarizing the aim, method, results, and conclusion, b) an introduction of 700-1000 words showing a background, a defined problem or a gap, and research questions, c) literature review of 800-1000 words, d) method of 500 words defining participants, research design, instruments, data analysis, and procedure, e) results of 300 words using paragraphs and tables, f) discussions 500-800 words, g) conclusions of 300 words, and h) reference list using APA referencing style.

Data collection instruments

The questionnaire

This study used a two-section questionnaire to collect data about students' RSE and IM, namely the Research self-efficacy scale and intrinsic motivation scale. Each section represented a scale to measure the two constructs as follows.

RSE scale

The participants' RSE was measured using The RSE Scale-Shortened (RSES-S); the short form of Phillips and Russell's (1994) RSES. The original scale has 33 questions divided into four subscales including (1) research design skills (eight questions), (2) practical research skills (eight questions), (3) quantitative and computer skills (eight questions), and (4) writing skills (nine questions). Each question is given a score between zero which reflects the belief of inability and nine which reflects the belief of full ability performing in the items. Phillips and Russell (1994) reported a high Cronbach's alpha (0.94) of the total score of the scale. As the study targets undergraduate students who only requested to write a research paper, 15 irrelevant items were dropped out and the scale included 18 items. The scale was corrected according to the student's selection of one response from 9 responses when 1 is the lowest score and 9 is the highest one. Thus, the highest score a student can get is 162

and the lowest one is 18. Table 2 shows the distribution of questions of RSES-S compared to the original one.

Table 2
Subscales and no. of items in RSES & RSES-S

Subscales	RSES-S	RSES	Cronbach's Alpha*
Research design skills	5	8	0.78
Practical research skills	5	8	0.69
Quantitative and computer skills	5	8	0.81
Writing skills	3	9	0.89
Total	18	33	0.94

* Phillips & Russell (1994)

IM scale

This scale, adapted from Deemer et al. (2012) and Ryan and Deci (2000a), included two dimensions; four items to measure IM for doing research (e.g., "When I am doing research, I feel proud of the attainment of a valued outcome") (α= 0.992), and four items to measure IM for writing a research paper (e.g., "When I am writing a research paper, I feel motivated by myself, not by others") (α= 0.714). Responses to scale items were recorded using a five-point Likert scale (1=strongly disagree, 5=strongly agree). Each dimension yielded scores ranging from 5 to 20.

Research Scoring Rubric

Hafner and Hafner (2003) define a rubric as "a simple assessment tool that describes levels of performance on a particular task and is used to assess outcomes in a variety of performance-based contexts" (p.1509). Teachers and evaluators design rubrics as descriptive scoring schemes to analyze students' learning outcomes and efforts (Brookhart, 1999). Their potential is clear in providing explicit expectations and criteria to facilitate feedback and self-assessment (Jonsson & Svingby, 2007). This study leveraged existing scales for scoring academic writing (Jacobs, et al., 1981; Carroll & West, 1989; Reid, 1993; Weir, 1993; Tuyen, et al., 2018) to adopt a well-designed analytical scoring rubric as a tool that presented the written performance expectations for the final written research paper and evaluate different and specific textual features. To ensure reliability and objectivity, the rubric provided clear descriptions of the core characterized components of the research paper writing ability and analytically assigned a score to each of the aspects being assessed in the research paper. Scores ranged from 'excellent' to 'poor' performance on the marking scale with graded levels. This analytical approach focuses on sentence-level aspects as well as macro-ones. The analytical scoring approach was adopted for its explicit feedback, diagnostic capabilities (Park, 2003), and ease of use for inexperienced raters (Cohen, 1994; McNamara, 1996). The rubric had four writing components graded separately namely content, organization, linguistic accuracy, and mechanics. It had four criterion levels that presented concise and detailed definitions for each level and were converted into grades according to the grading system of the course. Ten expert assistant professors from the English language department reviewed and validated the rubric. Considering their comments, the final version of the rubric was confirmed as illustrated in Table 3.

Table 3
Scoring Rubric of research paper writing ability

Writing Components	Criterion levels	Grade	Description	Total Grade
Content	Excellent	11-14	It provides perfect treatment of the topic. It presents balanced and authentic information that supports a central argument. It reflects an in-depth analysis of the topic and provides readers with important insights and understanding of the topic.	14 >2 fails
	Good	8-10.9	It provides an adequate treatment of the topic. Most of the content is relevant to the topic, the information reasonably supports the central argument, offers a basic analysis of the topic, and allows readers to gain some insights.	
	Average	4 -7.9	It provides hardly adequate treatment of the topic, sometimes includes irrelevant content to the topic, shows general analysis, and shows few insights to readers.	
	Poor	2-4.9	It provides an inadequate treatment of the topic, contains almost no useful detail, doesn't identify the central argument, and the topic analysis is not evident. The reader is misinformed.	
Organization	Excellent	8-10	It demonstrates fluent and clearly stated ideas. The paragraphs or sections are appropriately organized, with coherent logical sequence. Connectives are used appropriately to ensure cohesion.	10 >2 fails
	Good	6 -7.9	It has uneven expression, but the main ideas are clear and stand out. Section organization is evident and well-structured. There is a logical sequence. Connectives are appropriately used to ensure cohesion throughout the text.	
	Average	4 - 6.9	It exhibits very uneven expression. Section organization does not effectively aid the reader to follow the main ideas. The logical sequence is hard to follow. Connectives are largely absent, which affects the overall cohesion of the text.	
	Poor	2 -3.9	It lacks fluent expression, smoothness, and clarity, making it challenging for readers to follow. The main ideas are unclear or confusing. There is ineffective section organization. No connective words or phrases were used.	
Language Accuracy	Excellent	6 - 8	It shows precise word choice and usage, suitable selection for the intended tone, and appropriate use of grammatical structures. There are minimal errors in agreement, tense, number, word order/function, articles, pronouns, and prepositions. Meaning is always clear.	8 >2 fails
	Good	4 -5.9	It shows occasional mistakes in word choice and usage, mostly appropriate structures, and acceptable grammar with some issues with more complex structures. Registering is not always appropriate. Some errors in agreement, tense, number, word order/function, articles, pronouns, prepositions. Meaning is sometimes obscured.	
	Average	2 – 3.9	There is a noticeable number of mistakes in word choice and usage. Registering is not always appropriate. There is mostly an insufficient range of structures, with limited control shown only in simple constructions. There are frequent errors in agreement, tense, number, word order/function, articles, pronouns, and prepositions. Meaning is sometimes obscured.	
	Poor	0.5 -1.9	There are uncomfortably frequent mistakes in word/idiom choice and usage. There is no appropriate sense of register. There are major problems with structures like errors in negation, agreement, tense, number, word order/function, articles, pronouns, and prepositions. Meaning is often obscured.	
Mechanics	Excellent	6 - 8	It is virtually free of errors in punctuation, spelling, and APA style.	8
	Good	4 -5.9	There are occasional errors in punctuation, spelling, and APA style, but they don't significantly obscure meaning.	>2 fails
	Average	2 – 3.9	There are many errors in punctuation, spelling, and APA style and they distract the reader.	
	Poor	0.5 -1.9	There are numerous errors in punctuation, spelling, and APA style and they obscure the meaning.	
			Total	40

Procedure

In the first week, participants in both groups received an online questionnaire via a shared link, completing it twice: once at the beginning and again at the end of the course, upon submission of their research papers.

The experimental group received instruction on the collaborative script, which served as a scaffolding tool throughout the 12 two-hour sessions. Instructors monitored the experimental group's adherence to the collaborative script's procedures during the two-hour weekly sessions, with groups managing their out-of-class collaboration independently. The learning management platform Blackboard (Bb), enhanced with TURNITIN Plagiarism Checker, was used to receive all groups' submissions. Three raters (the instructors for each group) independently scored the research papers using the scoring rubric, with the final score being the average of the three ratings.

Data analysis

To answer the first question, A one-way MANOVA was conducted to determine if group (experimental vs. control) significantly affected the dependent variables (RSE and IM for research), accounting for potential correlations between variables.

To answer the second question and to determine if using the collaborative scrip might result in significant differences between the means of scores of the experimental group and the control group in the final evaluation of the research paper, an Independent Samples t-test was conducted assuming a null hypothesis. Levene's test was used to assure the homogeneity of variances within each group.

FINDINGS

To answer the first question, a one-way MANOVA was conducted to investigate the effect of using the collaborative script on students' RSE, IM for writing a research paper, and IM for doing research. MANOVA's six assumptions were met before conducting it: univariate and multivariate normality, linearity, outliers, multicollinearity, and homogeneity of variance-covariance matrices. Results showed that using collaborative script had a significant effect on raising participants' RSE, IM for writing a research paper, and IM for doing research, F (3,000) = 424,990, p = .001, Pillai's Trace = .944; partial η2= .944. Results in Table 5 showed that collaborative script had a statistically significant effect on IM for doing research (F (1, 78) = 378.34; p < .001; partial η2 = .829), IM for writing research paper (F (1, 78) = 619.88; p < .001; partial η2 = .888), and RSE (F (1, 78) = 156.92; p < .001; partial η2 = .668).

Table 4
Multivariate tests

Effect	Pillai's Trace Value	F	Hypothesis df	Error df	*Sig.	Partial Eta Squared
Collaborative script	.944	424.990	3.000	76.000	<.001	.944

* p < .05

Table 5
Tests of between-subject effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	*Sig.	Partial Eta Squared
Collaborative script	IM for doing research	1584.200	1	1584.200	378.34	<.001	.829
	IM for writing a research paper	1980.050	1	1980.050	619.88	<.001	.888
	RSE	112500.000	1	112500.000	156.92	<.001	.668

* p < .05

Concerning the second question, the results of Levene's Test produced when running the independent t-test indicated that group variances were equal which ensured the homogeneity of variance among groups as shown in Table 5. Accordingly, the independent t-test procedure was valid. Results from the Independent Samples t-test showed that students in the experimental collaborative script group significantly outperformed students in the control individual learning group. There were statistically significant differences in the means of scores on the criteria of organization (t=4.791, *p = .001)*, language accuracy *(*t=3.116, *p = .003),* mechanics *(t*=6.177, *p = .001),* and the total scores between the two groups (t=5.585, *p = .001)*. However, the difference between the two groups in the criterion of content was insignificant *(*t= 1.525, *p=.131).*

Table 6
Groups statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Content	experimental	40	10.33	2.080	.329
	control	38	9.61	2.087	.338
Organization	experimental	40	7.58	1.357	.214
	control	38	6.03	1.498	.243
Language Accuracy	experimental	40	6.68	1.095	.173
	control	38	5.84	1.263	.205
Mechanics	experimental	40	6.50	.599	.095
	control	38	5.61	.679	.110
Total Evaluation	experimental	40	31.05	4.101	.648
	control	38	26.05	3.784	.614

Table 7
Levene's Test of Equal Variances among Groups

	F.	*Sig.
Content	0.135	0.715
Organization	0.718	0.399
Language accuracy	0.347	0.577
Mechanics	0.894	0.347
Total evaluation	0.390	0.534

* *p* > .05

Table 8
Independent Samples t-test

	t	df	Sig (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Content	1.525	76	*.131	.720	.472	-.220	1.660
Organization	4.791	76	**<.001	1.549	.323	.905	2.192
Language accuracy	3.116	76	**.003	.833	.267	.300	1.365
Mechanics	6.177	76	**<.001	.895	.145	.606	1.183
Total evaluation	5.585	76	**<.001	4.997	.895	3.215	6.780

* $p > .05$
** $p < .05$

DISCUSSION

Addressing the study's first research question, MANOVA results revealed a significant increase in Research Self-Efficacy (RSE), Intrinsic Motivation (IM) for writing research papers, and IM for conducting research among the experimental (collaborative) group. This improvement is attributable to the collaborative nature of the task, resulting in increased engagement in both research and writing. The significant increase in RSE and IM directly resulted in more confident and engaged students. This is crucial for successful completion of research projects and fosters a positive learning experience. The increased RSE suggests students believe in their abilities to conduct research, leading to greater persistence and resilience in the face of challenges. Higher IM indicates students are genuinely interested and invested in their work, leading to improved effort and outcomes. This aligns with existing research demonstrating that clear, structured writing tasks, as provided by the collaborative script, enhance self-efficacy (Pintrich & De Groot, 1990; Kardash, 2000; Frantz et al., 2017; Fraile, Jet al., 2023) and motivation (Van Blankenstein, 2019).

Specifically, the significant increase in RSE linked to collaboration is consistent with previous findings. Considering RSE as "an individual's belief or confidence in his or her ability to successfully perform tasks associated with conducting research" (Forester et al., 2004, p. 4), its relationship to various variables—as an antecedent or concurrent factor—becomes clear. Moreover, its contextual nature (Bandura, 1997) highlights its dynamic and cumulative nature, influenced by multiple factors. Consequently, this supports the current results, suggesting a causal link between RSE and the collaborative context. This aligns with prior research demonstrating a significant relationship between RSE and the research training environment (Love et al., 2007; Livinţi et al., 2021; Fraile, J et al., 2023). In essence, high self-efficacy fosters resilience, commitment to research goals, and sustained motivation even amidst challenges.

The positive impact of collaboration on IM for both research and writing is further supported by previous research (Ryan & Deci 2000a, 2000b; Carr & Walton, 2014; Rosenkranz et al., 2015; Van Blankenstein, 2019). This can be explained through Self-Determination Theory, which posits three innate motivational drives: competence, autonomy, and relatedness (Ryan & Deci 2000b). Collaboration directly addresses these

drives by creating a supportive learning environment. For instance, the collaborative structure provided mutual support and encouragement through the five rounds of role exchange, thus boosting competence. Furthermore, engaging with diverse perspectives enhanced autonomy during the research and writing stages. Finally, the shared knowledge fostered a sense of belonging, fulfilling the need for relatedness. This is consistent with Lyu's (2023) findings showing a positive correlation between intrinsic motivation and collaborative learning. Although some studies indicate an insignificant impact of collaboration on IM for research (Van Blankenstein, 2019), numerous others underscore the significant value of collaborative opportunities (Carr & Walton, 2014, p. 183).

Turning to the second research question, the Independent Samples t-test results demonstrated that the experimental (collaborative script) group significantly outperformed the control (individual learning) group in writing research papers. Specifically, the collaborative script facilitated co-authored papers by guiding students through joint writing and citation practices. In addition, the reciprocal feedback process enhanced the quality and accuracy of the final product. The superior performance of the collaborative group in terms of organization, language accuracy, and mechanics of their research papers demonstrates a tangible benefit of collaboration. This improvement in the technical aspects of academic writing is significant for producing high-quality research outputs. The collaborative process, involving peer feedback and knowledge sharing, appears particularly effective for refining these technical skills. This advantage of collaborative writing aligns with previous research highlighting the benefits of shared ideas, knowledge, and opportunities for linguistic development (Dobao & Blum, 2013; Frantz et al., 2017).

While the collaborative script significantly improved organization, language accuracy, and mechanics, the lack of a significant difference in content scores requires further investigation. The improvements in structural and technical aspects suggest that peer feedback and knowledge sharing effectively enhanced these specific skills. This finding is consistent with research showing positive impacts of collaboration on grammatical and lexical accuracy (Dobao, 2012; Dobao & Blum, 2013; Villarreal & Gil-Sarratea, 2020; Davison, 2024). However, these improvements in structure may not have directly translated to superior content. In contrast, content quality often relies on individual knowledge, expertise, and unique insights. Therefore, while collaboration refines existing ideas, it may not inherently generate superior content. Since both groups likely possessed similar background knowledge and access to information, significant differences in content quality were less likely.

Finally, the collaborative script primarily focuses on the writing process, providing structural scaffolding rather than directly stimulating content generation. Consequently, the limited impact on content scores suggests a need for supplemental interventions focusing on content development, such as brainstorming techniques or targeted guidance on argumentation. This study did not explicitly address individual differences in prior knowledge or expertise, a limitation that could account for the lack of significant differences in content quality. Future research should explore integrating content generation techniques into collaborative scripts to enhance both structural and

content aspects of student writing. This approach would address the current limitations, providing a more comprehensive understanding of how collaborative scripts can effectively improve writing.

CONCLUSIONS

This study significantly contributes to the literature on undergraduate research by empirically examining the interrelationship between collaborative learning, RSE, and IM. Previous research has often treated RSE and IM as separate constructs. The findings provide valuable insights into how collaborative activities can simultaneously enhance both students' confidence in their research abilities and their engagement with the research process. They indicate that students increase their RSE and IM when they collaborate to do research and write a research paper. This highlights the pivotal role of collaborative research projects as students not only succeed in their academic writing tasks but also boost RSE and IM. The collaborative script provided undergraduates with novel research experiences that offered an alternative to the traditional, mentored apprenticeship. It helped to solve a critical problem of mentor shortage and time pressure. Collaboration in linguistic research projects among undergraduates fosters a sense of community, amplifies learning, and empowers students to contribute meaningfully to their field. By working together, English majors can enhance their self-efficacy, IM, and overall research experience. These results fill a critical gap and display the bi-directional relationship of collaboration between RSE and IM in undergraduate EFL programs. They confirm the need for conducting further research to probe into this area and its implications for educational practice. However, the findings presented should be considered within the context of the study's limitations. The sample consisted of 78 female participants, limiting the generalizability of the results to broader populations and potentially excluding gender-related influences. Future research with a larger, more diverse sample is recommended to further validate these findings.

ACKNOWLEDGMENTS

The author would like to thank Deanship of Scientific Research at Majmaah University for supporting this study under Project Number No.R-2025-1544.

REFERENCES

Bandura, A. (1989). Regulation of cognitive processes through perceived self-efficacy. *Developmental Psychology, 25*(5), 729–735. https://doi.org/10.1037/0012-1649.25.5.729

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: Freeman

Bartimote-Aufflick, K., A. Bridgeman, R. Walker, M. Sharma, & L. Smith. (2016). The Study, Evaluation, and Improvement of University Student Self-Efficacy. *Studies in Higher Education*, 41(11), 1918–1942.

Bishop, R. M., & Bieschke, K. J. (1998). Applying social cognitive theory to interest in research among counseling psychology graduate students: A path analysis. *Journal of Counseling Psychology, 45*, 182–188.

Bommarito, D. V. (2015). Collaborative research writing as mentoring in a U.S. English doctoral program. Journal of Writing Research, 8(2), p. 267-299. doi 10.17239/jowr-2016.08.02.04

Brookhart, S. M. (1999). The Art and Science of Classroom Assessment: The Missing Part of Pedagogy. *ASHE-ERIC Higher Education Report*, *27*(1).

Bruning, R. H., Dempsey, M., Kauffman, D. F., McKim, C., & Zumbrunn, S. (2013). Examining dimensions of self-efficacy for writing. Journal of Educational Psychology, 105, 25-38. doi:10.1037/a0029692

Bruning, R. H., & Horn, C. (2000). Developing motivation to write. Educational Psychologist, 35, 25-37. doi:10.1207/S15326985EP3501_4

Carr, P. B., & Walton, G. M. (2014). Cues of working together fuel intrinsic motivation. *Journal of Experimental Social Psychology*, *53*, 169-184.

Carroll, B. J., & West, R. (1989). *ESU framework: Performance scales for English language examinations.* Harlow: Longman

Chesnut, S. R., Siwatu, K. O., Young, H. A., & Tong, Y. (2015). Examining the relationship between the research training environment, course experiences, and graduate students' research self-efficacy beliefs. *International Journal of Doctoral Studies*, *10*, 399–418. https://doi-org.sdl.idm.oclc.org/10.28945/2310

Chumwichan, S., & Siriparp, T. (2016). Influence of research training environment on research interest in graduate students. *Procedia – Social and Behavioral Sciences*, *217*, 950–957. https://doi-org.sdl.idm.oclc.org/10.1016/j.sbspro.2016.02.065

Cohen, A. (1994). *Assessing language ability in the classroom.* Boston: Heinle & Heinle.

Cole, M. (2009). Using Wiki technology to support student engagement: Lessons from the trenches. *Computers and Education, 52*(1), 141–146.

Collins, W. A. (1983). Social antecedents, cognitive processing, and comprehension of social portrayals on television. In E. Troy Higgins, Diane N. Ruble, & Willard W. Hartup (Eds). *Social cognition and social development: A sociocultural perspective*, 110-133. Cambridge University Press.

Davison, I. (2024). The effects of completing collaborative or independent writing on the development of language use in individual writing. *Journal of Second Language Writing*, *65*, 101128.

Day. R & Gastel. B. (2012). *How to write and publish a scientific paper (7th ed)*. Cambridge University Press.

De Wever, B., Hämäläinen, R., Voet, M., & Gielen, M. (2015). A wiki task for first-year university students: The effect of scripting students' collaboration. The Internet and Higher Education, 25, 37–44 https://doi.org/10.1016/j.iheduc.2014.12.002

Deemer, E. D., Mahoney, K. T., & Ball, J. H. (2012). Research motives of faculty in academic STEM: Measurement invariance of the research motivation scale. *Journal of Career Assessment*, *20*(2), 182-195.

Demetriadis, S., & Karakostas, A. (2008). Adaptive collaboration scripting: A conceptual framework and a design case study. In *International Conference on Complex, Intelligent and Software Intensive Systems* (pp. 487-492). IEEE.

Diseth, A., A. G. Danielsen, & O. Samdal. (2012). A Path Analysis of Basic Need Support, Self-Efficacy, Achievement Goals, Life Satisfaction, and Academic Achievement Level among Secondary School Students. *Educational Psychology* 32 (3): 335–354. https://doi.org/10.1080/01443410.2012.657159

Dobao, A. F. (2012). Collaborative writing tasks in the L2 classroom: Comparing group, pair, and individual work. *Journal of Second Language Writing*, *21*(1), 40-58.

Dobao, A. F., & Blum, A. (2013). Collaborative writing in pairs and small groups: Learners' attitudes and perceptions. *System*, *41*(2), 365-378.

Ebadi, S., & Rahimi, M. (2018). An exploration into the impact of WebQuest-based classroom on EFL learners' critical thinking and academic writing skills: A mixed-methods study. *Computer Assisted Language Learning*, *31*(5–6), 617–651. https://doi.org/10.1080/09588221.2018.1449757

Fischer, F., Kollar, I., Stegmann, K., & Wecker, C. (2013). Toward a script theory of guidance in computer-supported collaborative learning. *Educational Psychologist*, 48(1), 56–66.

Forester, M., Kahn, J. H., & Hesson-McInnis, M. S. (2004). Factor structures of three measures of research self-efficacy. *Journal of Career Assessment, 12(1), 3–16.* https://doi.org/10.1177/1069072703257719

Fraile, J., Gil-Izquierdo, M., & Medina-Moral, E. (2023). The impact of rubrics and scripts on self-regulation, self-efficacy and performance in collaborative problem-solving tasks. *Assessment & Evaluation in Higher Education, 48*(8), 1223-1239.

Frantz, K. J., Demetrikopoulos, M. K., Britner, S. L., Carruth, L. L., Williams, B. A., Pecore, J. L., ... & Goode, C. T. (2017). A comparison of internal dispositions and career trajectories after collaborative versus apprenticed research experiences for undergraduates. *CBE—Life Sciences Education*, *16*(1), ar1.

Gelso, C. J., Mallinckrodt, B., & Judge, A. B. (1996). Research training environment, attitudes toward research, and research self-efficacy: The revised Research Training Environment Scale. *The Counseling Psychologist*, *24*(2), 304-322.

Graham, S., & Harris, K. R. (2000). The role of self-regulation and transcription skills in writing and writing development. Educational Psychologist, 35, 3-12. doi:10.1207/S15326985EP3501_2

Graham, S., & Weiner, B. (1996). Theories and principles of motivation. *Handbook of educational psychology*, *4*(1), 63-84.

Hafner, J., & Hafner, P. (2003). Quantitative analysis of the rubric as an assessment tool: an empirical study of student peer-group rating. *Int. J. Sci. Educ.*, *25*(12), 1509-1528.

Harris, K. R., & Graham, S. (2009). Self-regulated strategy development in writing: Premises, evolution, and the future. British Journal of Educational Psychology Monograph Series, II (6), 113-135. doi:10.1348/978185409X422542

Hartup, W. W., Brady, J. E., & Newcomb, A. F. (1983). Social cognition and social interaction in childhood. In E. Troy Higgins, Diane N. Ruble, & Willard W. Hartup (Eds). *Social cognition and social development: A sociocultural perspective*, 82-109. Cambridge University Press.

Heinonen, K., De Grez, N., Hämäläinen, R., De Wever, B., & van der Meijs, S. (2020). Scripting as a pedagogical method to guide collaborative writing: university students' reflections. *Research and Practice in Technology Enhanced Learning*, *15*, 1-20

Jacobs, H. J., Zingraf, S. A., Wormuth, D. R., Hartfiel, V. F. and Hughey, J. B. (1981). *Testing ESL composition: a practical approach*. Rowley MA, Newbury House.

Jones, T. (2006). *Examining potential determinants of parental self-efficacy*. University of South Carolina.

Jonsson, A., & Svingby, G. (2007). The use of scoring rubrics: Reliability, validity and educational consequences. *Educational research review*, *2*(2), 130-144.

Kahn, J. H. (2001). Predicting the scholarly activity of counseling psychology students: A refinement and extension. *Journal of Counseling Psychology, 48*, 344–354.

Kahn, J. H., & Scott, N. A. (1997). Predictors of research productivity and science-related career goals among counseling psychology graduate students. *The Counseling Psychologist, 25*, 38–67.

Kardash, C. M. (2000). Evaluation of an Undergraduate Research Experience: Perceptions of Undergraduate Interns and Their Faculty Mentors. *Journal of Educational Psychology 92* (1), 191–201.

King, A. (1997). ASK to THINK-TEL WHY: A model of transactive peer tutoring for scaffolding higher-level complex learning. *Educational Psychologist, 32*(4), 221–235.

King, A. (2007). Scripting collaborative learning processes: A cognitive perspective. In *Scripting computer-supported collaborative learning: Cognitive, computational and educational perspectives* (pp. 13-37). Boston, MA: Springer US.

King, A., Staffieri, A., & Adelgais, A. (1998). Mutual peer tutoring: Effects of structuring tutorial interaction to scaffold peer learning. *Journal of Educational Psychology*, *90*, 134–152.

Kobbe, L., Weinberger, A., Dillenbourg, P., Harrer, A., Hämäläinen, R., et al. (2007). Specifying computer-supported collaboration scripts. *International Journal of Computer-Supported Collaborative Learning, 2*(2/3), 211–224.

Kollar, I., Fischer, F., & Hesse, F.W. (2006). Collaboration scripts: A conceptual analysis. *Educational Psychology Review, 18*(2), 159–185. http://dx.doi.org/10.1007/s10648-006-9007-2

Kramer, I. M., & Kusurkar, R. A. (2017). Science writing in the blogosphere as a tool to promote autonomous motivation in education. *The Internet and Higher Education*, 35, 48–62. https://doi.org/10.1016/j.iheduc. 2017.08.001

Kusurkar, R. A., Croiset, G., & Ten Cate, O. T. J. (2011). Twelve tips to stimulate intrinsic motivation in students through autonomy-supportive classroom teaching derived from self-determination theory. *Medical teacher*, *33*(12), 978-982

Lave, J., & Wenger, E. (1991). Situated learning: Legitimate peripheral participation. New York, NY: Cambridge University Press. doi: 10.1017/CBO9780511815355

Lawlor, J., Marshall, K., & Tangney, B. (2016). Bridge21–exploring the potential to foster intrinsic student motivation through a team-based, technology-mediated learning model. *Technology, Pedagogy and Education, 25*(2), 187–206. https://doi.org/10.1080/1475939X.2015.1023828

Livinţi, R., Gunnesch-Luca, G., & Iliescu, D. (2021). Research self-efficacy: A meta-analysis. *Educational Psychologist*, *56*(3), 215-242.

Love, K. M., Bahner, A. D., Jones, L. N., & Nilsson, J. E. (2007). An investigation of early research experience and research self-efficacy. *Professional Psychology: Research and Practice*, *38*(3), 31

Lowry, P. B., A. Curtis, and M. R. Lowry. 2004. "Building a Taxonomy and Nomenclature of Collaborative Writing to Improve Interdisciplinary Research and Practice." *Journal of Business Communication* 41 (1): 66–99. https://doi.org/10.1177/0021943603259363

Lyu, T. (2023). The Mediating Effect of Self-Regulation on the Relationship between Intrinsic Motivation and Collaborative Learning in Undergraduate Second Language Learners. In *Proceedings of the 7th International Conference on Education and Multimedia Technology* (pp. 139-145).

Mayordomo, R. M., & Onrubia, J. (2015). Work coordination and collaborative knowledge construction in a small group collaborative virtual task. *The Internet and Higher Education*, *25*, 96-104.

McNamara, T. (1996). *Measuring second language performance.* London: Longman.

Miyazoe, T., & Anderson, T. (2010). Learning outcomes and students' perceptions of online writing: Simultaneous implementation of a forum, blog, and wiki in an EFL blended learning setting. *System*, *38*(2), 185–199. https://doi.org/10.1016/j.system.2010.03.006

Morrison, M. A., & Lent, R. W. (2014). The advisory working alliance and research training: Test of a relational efficacy model. *Journal of Counseling Psychology, 61(4),* 549–559. https://doi-org.sdl.idm.oclc.org/10.1037/cou0000030

Nelson, K. (1981). Social cognition in a script framework. In J.H. Flavell & L. Ross (Eds), *Social cognitive development* (pp.97-118). Cambridge: Cambridge University Press.

Pajares, F. (1997). Current directions in self-efficacy research. *Advances in motivation and achievement*, *10*(149), 1-49.

Pajares, F. (2003). Self-efficacy beliefs, motivation, and achievement in writing: A review of the literature. Reading and Writing Quarterly, 19, 139-158. doi:10.1080/10573560390143085

Park, T. (2003). Scoring procedures for assessing writing. *Studies in Applied Linguistics and TESOL*, *3*(1). https://doi.org/10.7916/salt.v3i1.1635

Phillips, J. C., & Russell, R. K. (1994). Research self-efficacy, the research training environment, and research productivity among graduate students in counseling psychology. *The Counseling Psychologist*, *22*(4), 628-641. https://doi.org/10.1177/0011000094224008

Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, *82,* 33740.

Pintrich, P. R., & Schunk, D. H. (1995). *Motivation in education: Theory, research, and Applications*. Englewood Cliffs, NJ: Prentice Hall

Quimbo, M. A. T., & Sulabo, E. C. (2014). Research productivity and its policy implications in higher education institutions. *Studies in Higher Education*, *39*(10), 1955–1971. https://doi-org.sdl.idm.oclc.org/10.1080/03075079.2013.818639

Reid, J. (1993). *Teaching ESL Writing*. Prentice Hall.

Richardson, M., C. Abraham, & R. Bond. (2012). Psychological Correlates of University Students' Academic Performance: A Systematic Review and Meta-Analysis. *Psychological Bulletin* 138 (2): 353–387. doi:10.1037/a0026838.

Rosenkranz, S. K., S. Wang, & W. Hu. (2015). Motivating Medical Students to Do Research: A Mixed Methods Study Using Self-Determination Theory. *BMC Medical Education 15*(1), 95.

Ryan, R. M., & E. L. Deci. (2000a). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions." *Contemporary Educational Psychology* 25 (1): 54–67. doi:10.1006/ceps.1999.1020.

Ryan, R. M., & E. L. Deci. (2000b). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being." *American Psychologist* 55 (1): 68–78.

Santos, A. G. M., & Alliprandini, P. M. Z. (2023). Effectiveness of a collaborative intervention in self-regulation and self-efficacy of higher education students. *International Journal of Instruction*, *16*(2), 179-194.

Schank, R.C.,& Abelson,R. (1977).scripts, plans, goals and understanding.Hillsdale, NJ: Lawrence Erlbaum.

Stajkovic, A. D., Bandura, A., Locke, E. A., Lee, D., & Sergent, K. (2018). Test of three conceptual models of the influence of the big five personality traits and self-efficacy on academic performance: A meta-analytic path-analysis. *Personality and Individual Differences*, *120*, 238–245. https://doi-org.sdl.idm.oclc.org/10.1016/j.paid.2017.08.014

Stegmann, K., A. Weinberger, and F. Fischer. (2007). Facilitating Argumentative Knowledge Construction with Computer-Supported Collaboration Scripts. *International Journal of Computer-Supported Collaborative Learning*, 2 (4), 421–447. doi:10.1007/s11412-007-9028-y

Storch, N. (2005). Collaborative writing: Product, process, and students' reflections. *Journal of second language writing*, *14*(3), 153-173

Swain, M. and Lapkin, S. 1998: Interaction and second language learning: two adolescent French immersion students working together. *Modern Language Journal* 82: 320-337.

Swain, M., & Lapkin, S. (1995). Problems in output and the cognitive processes they generate: A step towards second language learning. *Applied linguistics*, *16*(3), 371-391.

Szymanski, D. M., Ozegovic, J. J., Phillips, J. C., & Briggs-Phillips, M. (2007). Fostering scholarly productivity through academic and internship research training environments. *Training and Education in Professional Psychology, 1*, 135–146.

Talib, T., & Cheung, Y. L. (2017). Collaborative writing in classroom instruction: A synthesis of recent research. The English Teacher, 46(2).

Talsma, K., Schüz, B., Schwarzer, R., & Norris, K. (2018). I believe, therefore I achieve (and vice versa): A meta-analytic cross-lagged panel analysis of self-efficacy and academic performance. *Learning and Individual Differences, 61*, 136–150. https://doi-org.sdl.idm.oclc.org/10.1016/j.lindif.2017.11.015

Tuyen, K. T., Osman, S. B., Ahmad, N. S., & Dân, T. C. (2018). Developing and validating scoring rubrics for the assessment of research papers writing ability of EFL/ESL undergraduate students: The effects of research papers writing intervention program using process genre model of research paper writing. International Journal of Language, Literature, Culture, and Education. http://icsai.org/ijllce/archive/2018/issue1/ijllce-061.pdf

Van Blankenstein, F. M., Saab, N., Van der Rijst, R. M., Danel, M. S., Bakker-van den Berg, A. S., & Van den Broek, P. W. (2019). How do self-efficacy beliefs for academic writing and collaboration and intrinsic motivation for academic writing and research develop during an undergraduate research project? *Educational Studies*, *45*(2), 209-225.

Van Dijk, A. M., H. Gijlers, and A. Weinberger. (2014). Scripted Collaborative Drawing in Elementary Science Education. *Instructional Science,* 42 (3): 353–372. doi:10.1007/s11251-013-9286-1

Villarreal, I., & Gil-Sarratea, N. (2020). The effect of collaborative writing in an EFL secondary setting. *Language Teaching Research*, *24*(6), 874-897.

Weir, C. (1993). *Understanding and developing language tests*. Hemel Hempstead, Prentice Hall.

Wichmann, A., & Rummel, N. (2013). Improving revision in wiki-based writing: Coordination pays off. *Computers & Education*, *62*, 262-270.

Zimmerman, B. J., & Risemberg, R. (1997). Becoming a self-regulated writer: A social cognitive perspective. Contemporary Educational Psychology, 22, 73-101. doi:10.1006/ceps.1997.0919