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Agile Learning: Students' Perceptions of Collaboration

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Agile Learning: Students' Perceptions of Collaboration

by

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Abstract

Educators are encouraged to incorporate collaborative learning into their classrooms in order to promote active learning through teamwork. However, students often regard collaboration as lacking coordination and accountability among the team members, thus resulting in fewer opportunities for academic success. Nested within project-based learning, agile learning provides the framework for effective team and workflow regulation which is based on a collaborative, incremental and iterative learning process.

With the help of the quasi-experimental method, both quantitative and qualitative data was collected through a series of anonymous surveys. Aimed to investigate whether the incorporation of agile learning has an effect on students' perception of collaboration opportunities and their academic performance in college-level English for Academic Purposes (EAP) classes, the results of the study indicated that the learners did not perceive a correlation between agile learning and the aforementioned notions. The findings are discussed in relation to the learners' preferences for learning in foreign language classrooms and their own definition of collaboration which is ultimately reduced to the individual work process.

Keywords: agile, agile learning, English for Academic Purposes (EAP), collaboration, self-perceived academic performance

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Just like millions of Ukrainians, Russia's full-scale illegal invasion of Ukraine on February 24, 2022, has become the before-and-after moment of my life. With all of my family members and friends trapped in besieged Mariupol, I had to learn how to channel my guilt into continuing my education and donating to the Armed Forces of Ukraine. Glory to Ukraine.

I am deeply indebted to my friends who made my life bearable during this arduous journey. For thousands of tacos, hundreds of pupusas, and an indefinite supply of coffee. Thank you all.

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Chapter 1: Introduction

The modern fast-paced workplace requires employees to effectively work with other team members. In lieu of a person single-handedly carrying out a task, the need for collaboration has shaped the multifaceted nature of work (Lorenzo Galés & Gallon, 2019). In order to prepare students for such a work environment, it is crucial for collaboration skills to be developed in educational settings. On the other hand, this trend has yet to be reflected in the way educational institutions approach classroom instruction. However, in conventional classrooms with rigid plans and syllabi, opportunities for productive collaboration are limited, and students often view collaboration as lacking coordination and accountability, potentially affecting their academic success (Pope-Ruark et al., 2011).

In light of this, the current study aims to explore the impact of incorporating agile learning on students' perceptions of collaboration opportunities and academic performance in college-level English for Academic Purposes (EAP) classes. Agile learning represents an approach to teaching and learning that emphasizes collaboration and flexibility in order "to offer multiple paths to meet growing demands for personalized learning" (Lorenzo Galés & Gallon, 2019, p. 99), making it a suitable tool for investigating students' perceptions of collaboration and academic success in the classroom. As a result, students are offered a more active role in the educational process through a collaborative knowledge building (Scardamalia & Bereiter, 2006).

With the aim of examining the effect of agile learning on collaboration and academic performance, this research will explore students' perceptions in the college-level EAP classrooms. Specifically, we investigate whether agile learning practices increase perceived collaboration opportunities and academic performance.

The research questions that have shaped the study are as follows:

1. Does the implementation of agile learning practices in the context of college-level EAP classes increase students' self-perceived collaboration opportunities?
2. How do agile learning practices correlate with students' self-perceived academic performance in college-level EAP classes?

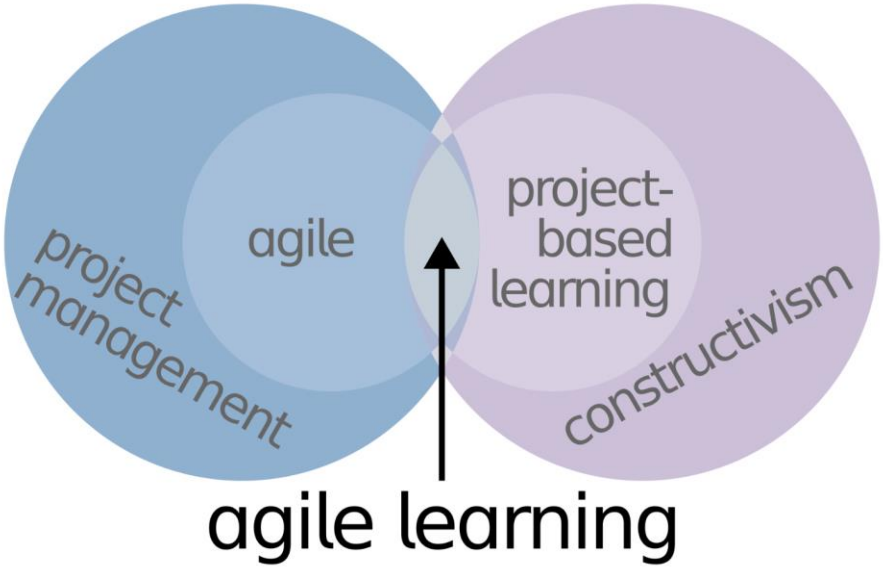
The findings of this study present implications for the development of pedagogical practices in the field of EAP, as well as for the wider education community. Specifically, the study contributes to a better understanding of how agile learning could be used to improve students' perceptions of collaboration and academic performance.

Chapter 2: Literature Review

This chapter provides background information on agile learning as the conceptual framework by explaining its twofold nature. Specifically, as seen in Figure 1, agile learning dwells on the agile approach within project management and project-based learning (PBL) within the constructivist learning theory which will be described in the subsections that follow.

Figure 1

Conceptualizing agile learning



2.1. Agile project management

Generally speaking, agile (sometimes referred to as Agile, agile methods, agile methodologies, agile philosophy, or the agile framework) is a collective term for project management methods that "are common-sense approaches for applying the finite resources of an organization to deliver high business-value software solutions … [and] have emerged over the past two decades to increase the relevance, flexibility and business value of software solutions" (Cooke, 2016, p. 16). Formally introduced in 2001 by a group of software developers, the four values of agile remain unchanged up to this day:

> We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:
>
> 1. Individuals and interactions over processes and tools.
> 2. Working software over comprehensive documentation.
> 3. Customer collaboration over contract negotiation.
> 4. Responding to change over following a plan.
>
> That is, while there is value in the items on the right, we value the items on the left more (Manifesto for Agile Software Development, 2001).

It is important to note that although the term "software" is frequently encountered when discussing the topic of agile, it should be treated as one that broadly refers to any product, not necessarily restricted to the field of software development.

The flexibility of the agile framework is contrasted to the waterfall or plan-based project management methods, which boldly claim that there exists an optimal and pre-determined solution for any problem (Dyba & Dingsoyr, 2008). On the other hand, the iterative and incremental nature of agile defies the need for over-planning and freezing design choices as early as possible. This implies frequent customer interaction and collecting feedback in a timely manner rather than evaluating the project success in the post-mortem analysis, "only to discover that technological advances have eclipsed the need for it" (Serrador & Pinto, 2015). To put it simply, products are repeatedly modified and enhanced to meet customer specifications in the pursuit of design continuity. Hence agile has become popular in part because it addresses some of the limitations of the waterfall-based project management approach.

The comparison between the two frameworks is provided in Table 1 below. Such key items as planning and uncertainty, project workflow, team communication, and customer input are used to anchor the comparison.

Table 1

The comparison between the waterfall and agile methods

	Waterfall methods	**Agile methods**
Planning and uncertainty	The project is defined from the very beginning. The project scope is rigid, with all Key Performance Indicators (KPIs) outlined prior to the project start.	A minimum viable product (MVP) is sought after. Although the project scope has been discussed, the project features are released incrementally depending on the project needs. KPIs are regularly updated to reflect the changes.
Project workflow	All tasks and estimates are extensively and meticulously defined. Updates to the task descriptions are not favored due to the likelihood of missing the project deadline that has been finalized. The project is released at once.	A general list of tasks (commonly referred to as a Product Backlog) is produced at the beginning of the project. At the beginning of each incremental cycle (Sprint), tasks from the Product Backlog are selected depending on the current project needs. The MVP is released to the public in its earliest form and is continuously updated.
Team communication	Teams follow a rigid hierarchy. Tasks and estimates are defined by project managers and communicated to the rest of the team. The project visibility among the team members is low.	Teams follow a flat hierarchy. Tasks and estimates are discussed and defined by those who will be assigned to complete said tasks. The whole team is involved in the discussion process to increase the project visibility.
Customer input	Customers are extensively communicated with prior to the beginning of the project. As the project is being developed, customers are not involved in updating the project scope.	Customers are communicated with throughout the whole project. The project updates follow the requests for customer feedback which will be reflected in the upcoming sprints.

2.2. Constructivism and project-based learning

The reason for educators being interested in exploring agile is the similarities between project management and teaching (Stewart et al., 2009). Both processes require planning, implementation, and evaluation, ultimately making sure that a project or a course is delivered on time according to the specifications. Hence, it can be hypothesized that the parallelism between project management and teaching is rooted in the constructivism learning theory which attempts to explain the nature of the individual learning process. Specifically, constructivism defines learning as a self-regulating process during which learners build their own knowledge through being actively engaged in a rich learning environment (Driver et al., 1994). Since practical activities supported by group discussions are at the core of this pedagogical practice, learners continuously modify their learning scheme through authentic problem-solving. This allows "learners to adapt their cognitive structures and concepts in response to demands within their environment" (Piaget, 1964) since teaching takes place in the context of learners' social life.

Aligned with the constructivist principles, project-based learning is an instructional approach that creates an interactive process between the learner and the context. In other words, it involves designing learning experiences around extended projects that allow students to explore a topic in depth and apply what they have learned to real-world problems or challenges. The teacher's role is to act as a facilitator of learning by providing guidance and support as needed, rather than simply carrying out knowledge transfer (Bélanger, 2011). PBL can be an effective way to engage students in their learning. Given that projects are meant to be worked on in groups, it helps students develop important skills such as problem-solving, critical thinking, and collaboration. It can also be an effective way to promote deeper understanding of the material, as students are able to apply what they have learned in relevant and authentic contexts.

Highly relevant to the constructivism learning theory is Lev Vygotsky's concept of the Zone of Proximal Development (ZPD) as it emphasizes the importance of social interaction and collaboration in the learning process (Daniels, 2001). Specifically, the ZPD refers to the difference between what a learner can do independently immediately without any assistance and what they can do with the guidance and support of a knowledgeable peer. In the context of the constructivist learning theory, the ZPD provides a framework for collaboration and social interaction in the learning process. In turn, the support and guidance provided by knowledgeable peers is referred to as scaffolding. In the constructivist approach, scaffolding can take many forms, including guiding questions, prompts, and modeling, all of which help learners move to a new level of understanding (Kellogg, 2018).

2.3. Agile learning

Nested within PBL, agile learning can be defined as a flexible approach to teaching and learning that is based on the principles of constructivism and the agile project management framework, defying the need for rigid planning and promoting collaboration instead. While agile learning stands at the forefront of both agile learning and PBL, there are several key differences between the two methods (Lopez-Alcarria et al., 2019). First and foremost, agile learning emphasizes flexibility and iteration, with a focus on adapting to circumstances and continuously adjusting the learning process. In contrast, PBL typically involves a more structured approach to planning and execution of the learning process, with a predetermined project scope. In addition, a greater emphasis is placed on the learning process itself within agile learning, with the goal of improving students' skills and knowledge over time with the help of frequent formative feedback and opportunities for reflection and adjustment. PBL, on the other hand, often emphasized the final product or the outcome of the project.

Taking the aforementioned differences in mind, agile learning has been labeled as the approach that provides “a collective platform for modeling, experiencing, and validating teaching and learning processes" (Lorenzo Galés & Gallon, 2019, p. 105), thus forcing students to interact with their fellow colleagues as part of a self-regulating team. In other words, agile learning fulfills the two functions:

1. Students collaborate to learn. In other words, as a self-organizing team, the students map out, carry out, and self-regulate their learning process within the assigned project “according to their personal learning rhythms, their learning styles” (Lorenzo Galés & Gallon, 2019, p. 105). Consequently, students feel a high degree of accountability for their own learning (May et al., 2016).
2. Students learn to collaborate. Given that teamwork and frequent communication stand at the core of the agile philosophy, students are bound to flourish as effective communicators (Pope-Ruark et al., 2011). Certainly, those social skills are invaluable not only in academic settings, but in the diverse professional contexts that learners will be part of outside the classroom (Lee et al., 2015).

In agile learning, it is important to refer to Vygotsky’s ZPD once again. Given that agile learning emphasizes the importance of working in teams and collaborating with others to solve complex problems, in this context the ZPD becomes the space in which team members can learn from each other, share their knowledge and expertise, and build upon each other's ideas (Kellogg, 2018). By creating this incremental and iterative agile environment, learners can continue to push their limits and develop new skills and knowledge through peer interaction.

Based on the information presented in the previous subsections, it is possible to hypothesize that the introduction of agile learning into the instructional process will have a

positive impact on student accountability and collaboration. Table 2 below illustrates the main differences between waterfall learning and agile learning.

Table 2

Main differences between waterfall learning and agile learning

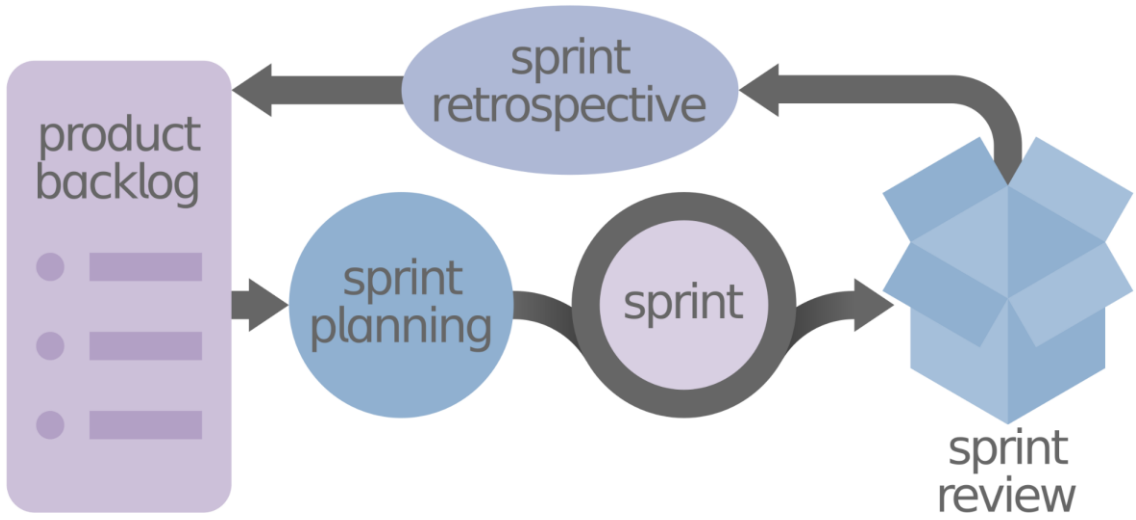
	Waterfall learning	**Agile learning**
Syllabus	Rigid and overspecified. Changes are rarely introduced throughout the semester.	Flexible. Changes can be introduced at the beginning of each unit (and, if necessary, some lessons).
Tasks and workflow	All tasks are meticulously defined by a teacher who micromanages the learning process and acts as the source of knowledge.	A general list of tasks is provided to students who in turn break them down into smaller tasks. A teacher acts as a facilitator of the learning process by introducing various sources of knowledge.
Communication	Highly hierarchical.	Flat hierarchy.
Projects	Most often than not reduced to individual learning.	A mix of group and individual learning, with the former favored most of the time.
Assessment and evaluation	Carried out after the work has been submitted.	Continuously provided, thus allowing students to reflect received feedback in their work.

In order to execute agile learning, the instructional process has to be modified to embody the aforementioned flexibility. Specifically, agile learning is designed for teams of 5 or fewer members that incrementally and iteratively work throughout the semester. As part of self-regulating teams, learners break the product backlog (which is provided by the instructor at the beginning of each unit) into smaller tasks which can be completed within the fixed period of time (sprints) to achieve the project goal. First, each team determines which items are to be selected from the product backlog and then assesses their progress during 10-minute meetings (commonly referred to as daily stand-ups). Throughout the sprint, the team is working at their own pace to

meet the outlined goal. At the end of each sprint, two additional meetings are held – sprint review and sprint retrospective. As for the former, the team presents the work done in front of their classmates and then plans the upcoming sprint by revisiting the product backlog. When it comes to sprint retrospectives, the team reflects on their workflow and plans ways to increase effectiveness, therefore concluding the sprint. This process is outlined in Figure 2, with a detailed description to follow in the subsection below.

Figure 2

Agile learning



2.3.1. Team roles and responsibilities

In their Scrum Guide, Schwaber & Sutherland (2020) highlight that the fundamental unit of agile is a small team of people. Empowered to manage their own work processes, this team is "responsible for all product-related activities from stakeholder collaboration, verification, maintenance, operation, experimentation, research and development, and anything else that might be required" (p. 5). The team members are outlined as follows:

1. Developers – members of the team that possess the skills to bring value to each sprint. Certainly, depending on the area of expertise needed to meet the product goal, the skillset of developers will vary. For instance, if the team functions in the area of publishing, some of the common developer roles could be a Copywriter, Editor, Copy Editor, Illustrator, etc. (Indeed Editorial Team, 2021).
2. Product owner – a key stakeholder that represents the needs of (potentially, many) stakeholders by defining the product backlog, communicating product backlog items to the rest of the team, ensuring that the product backlog is transparent and understood in order to ultimately need the product goal.
3. Scrum master – one team member who establishes the agile framework and ensures that the team follows its principles, by empowering the team to improve their practices within the agile philosophy. Whether "helping the Scrum Team focus on creating high-value Increments" or "ensuring that all Scrum events take place and are positive, productive, and kept within the timebox", the scrum master enables transparency across the whole team (p. 6).

As for the educational settings, creating teams has been found extremely beneficial in college courses that require collaboration and problem solving (Pope-Ruark, 2011, p. 14). Drawing upon the information described above, we suggest assigning the following team roles and responsibilities within educational courses as seen in Table 3 below.

Table 3

Team roles and responsibilities in educational courses

Team Role	Equivalent	Responsibilities
Product owner	Instructor	1. Communicates with the stakeholders to assess what product(s)/service(s) need to be created by the team. 2. Defines the product backlog. 3. Communicates the product backlog to the team during sprint planning. 4. Provides further clarifications regarding the product backlog items as/if necessary during stand-ups. 5. Evaluates the created product(s)/service(s) during the sprint review to ensure that they meet the stakeholders' expectations.
Scrum master	1 student	1. Hosts team meetings. 2. Helps the team break the product backlog into smaller tasks that will be assigned to each member depending on their skills/expertise. 3. Ensures that the progress board is up-to-date. 4. Facilitates collaboration among the team members. 5. Assists the team in completing the assigned tasks as necessary.
Developers	2-4 students	1. Breaks down the product backlog into user stories which represent smaller executable tasks to be completed during sprints. 2. Delivers the product(s)/service(s) in an iterative and incremental way. 3. Participates in team meetings.

Note. The Product owner (in this case, the instructor) will remain the same across the teams.

In one of the existing studies that implemented the use of agile in college settings, the stakeholders represent the existing companies. In their Information System course, Podeschi (2016) was able to secure partnerships with local businesses. In turn, students had to iteratively create database applications based on specific needs outlined by the clients. In other studies that were conducted within the Professional Writing and Rhetoric program (Pope-Ruark et al. 2011; Pope-Ruark, 2012), on-campus departments were invited as stakeholders. For instance, students

were asked to create a series of how-to videos for the university library or a template for departmental case studies (Pope-Ruark, 2012, p. 165).

Certainly, it might not be possible to find real stakeholders who are interested in having their problems addressed by students. In that case, the role of stakeholders can be performed by other instructors or the instructor of the course himself/herself.

2.3.2. Product backlog, sprints, and stand-ups

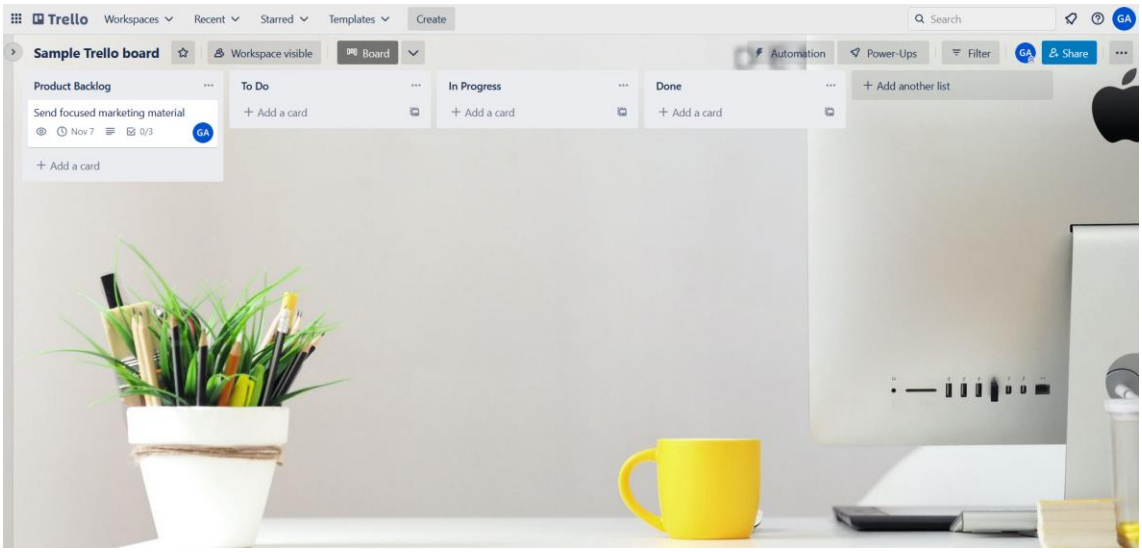
The product backlog is defined as "an emergent, ordered list of what is needed to improve the product" (Schwaber & Sutherland, 2020, p. 10). It contains user stories that chiefly describe what features need to be created to launch the product. It should be noted, however, that a user story is not "a detailed specification of a requirement" (Measey et al., 2015, p. 53) since each user story will be further broken down into smaller executable and trackable items. The user story can be presented in the bulleted format as follows:

- **As a** (the "who") – Business Developer Manager
- **I want** (the "what") – the ability to identify all people who have registered or re-registered on our system in the last 3 months
- **So that** (the "why") – I can send focused marketing material to those people (Measey et al., 2015, p. 53).

The product backlog could be presented in the Trello board (Atlassian, 2022), a free project management tool that helps people organize the ideas. Specifically, the Trello board is composed of columns (lists) that can be given unique titles (for example, the "to do" list), each of them containing an indefinite number of cards (in this case, each card represents a task to be completed). The card can be dragged from one list to another to indicate that the tasks are to be done, are in progress, or have been completed. The sample trello board is displayed in Figure 3.

Figure 3

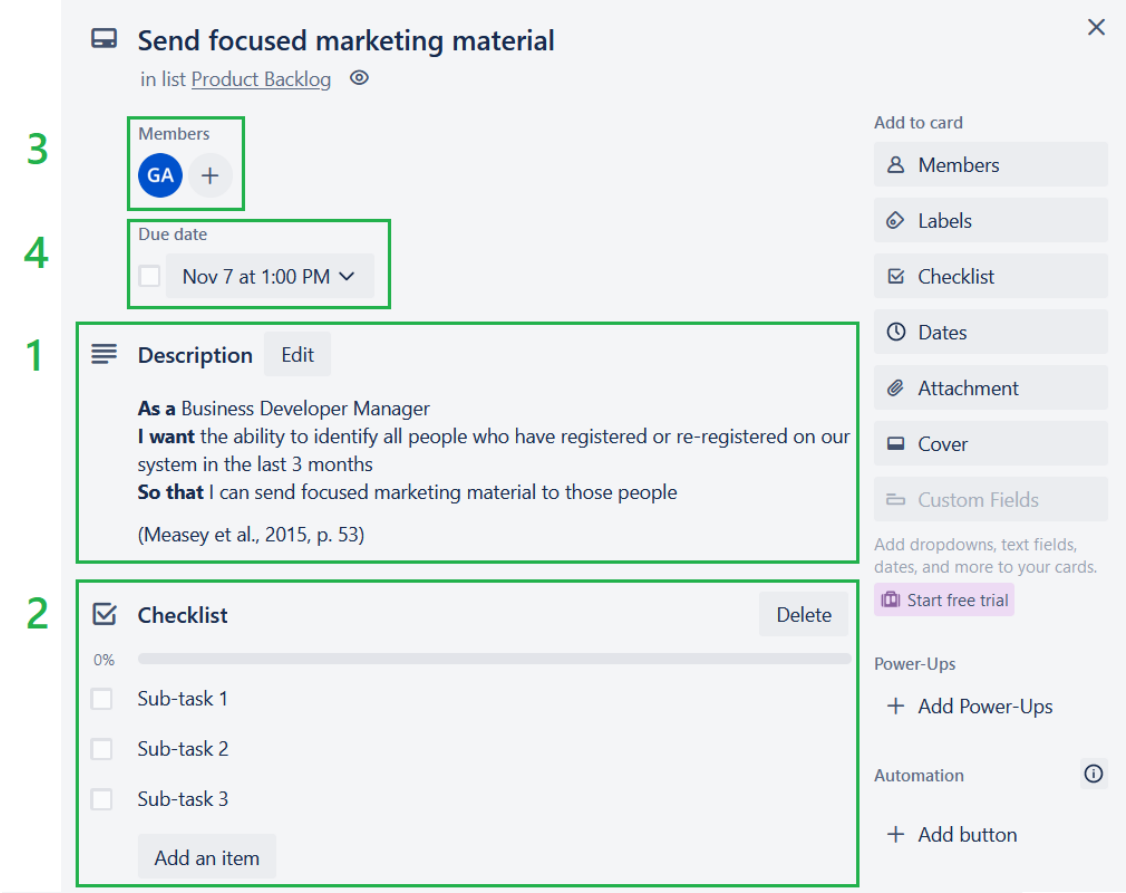
Sample Trello board



As shown in Figure 4 below, any card can be given (1) a description, (2) broken down into sub-tasks, (3) assigned to a team member, and (4) given a deadline by clicking on the card in the list.

Figure 4

Sample Trello card



At the beginning of each unit, the instructor updates the Trello board and briefly outlines the product backlog. Then students are required to break it down into sub-tasks by updating corresponding Trello cards. By doing so, students are essentially creating to-do lists for the upcoming sprint. In turn, the instructor of the course has access to all Trello boards to keep track of students' progress and provide timely feedback and/or assistance. The process of sprint planning involves the team of students discussing the project needs and breaking down the user stories into executable tasks along with their estimates (i.e. how long each task would take to be completed). Any tasks that cannot be completed during one sprint remain in the product backlog.

It should be noted that if the sprint is not restricted to only one lesson, each class should be started by each team having a 10-minute stand-up (Schwaber & Sutherland, 2020) during which the team plans their work for the day ahead. The product owner could be present during those stand-ups if requested by the team.

2.3.3. Sprint reviews and sprint retrospectives

The sprint review serves the purpose of showcasing the results of the sprint to the stakeholders and discussing the progress toward achieving the product goal. It should be noted that "the Sprint Review is a working session and the Team should avoid limiting it to a presentation" (Schwaber & Sutherland, 2020, p. 9). The product backlog can be adjusted based on the received feedback.

In turn, the sprint retrospective is a short meeting during which the team reflects on the workflow and team interactions that took place during the sprint. Specifically, the team discusses things that went well or did not go well, what problems occurred, how these problems were addressed, and how these problems could have been addressed in a more efficient way. The sprint retrospective concludes the current sprint, and another sprint starts (Schwaber & Sutherland, 2020).

2.4. Past empirical studies within the agile framework

Drawing on the large-scale quantitative analysis of agile project success with a data sample of 1002 projects across various industries, including education (Serrador & Pinto, 2015), it is theorized that agile can be used to:

- bring real-world experiences into the classroom,
- promote self-regulated learning,
- increase the efficacy of the project workflow and collaboration opportunities,

- positively affect one's satisfaction with communication and perception of overall project performance.

An overwhelming number of studies on agile learning features capstone or project-based university courses in the STEM field, an acronym that stands for science, technology, engineering, and mathematics. The need for flexible and adaptable learning approaches that have been deemed indispensable in the modern workplace (Lopez-Alcarria et al., 2019) have resulted in the STEM disciplines being "a natural fit for project management and capstone courses" (Sharp & Lang, 2018, p. 46). Almost every paper written on agile includes a section which briefly introduces common agile learning tools such as creating product backlogs, splitting the class into self-organizing teams, hosting sprints and goal-specific meetings (sprint planning, daily stand-ups, sprint reviews, and sprint retrospectives). Given that this information has also been featured in the current research work (see 2.3. Agile learning), only the Results sections of the STEM-related empirical studies on agile learning will be reviewed below.

For instance, agile was utilized to foster cooperative learning in a semi-capstone System Analysis and Design Course (Magana et al., 2018) and in project management classrooms (Rush & Connolly, 2020). The results of the studies suggest that working in self-organizing teams equips students with social skills that are extremely difficult to acquire in waterfall classrooms where students' involvement in the planning process is limited. Conversely, when the agile framework is utilized, students are empowered to structure their own learning journey by breaking down the assignments into incremental and iterative deliverables. This would not have been possible without stand-ups, quick daily meetings, that serve as an opportunity to discuss the workflow, during which intragroup conflict is bound to arise (Lee et al., 2015). Despite those

authentic challenges, students "developed feelings of competence in socially-complex soft skills" (Magana et al., 2018, p. 205) which are essential in any academic setting or workplace.

Others (González-Marcos et al., 2016; Noguera et al., 2018) have highlighted the reported relevance of agile learning in the context of self-perceived academic success which led to the increased "positive expectations of future professional development" (González-Marcos et al., 2016, p. 172). Similarly, the participants of the study conducted by Noguera et al. (2018) expressed that the implementation of agile learning "made it easier for students to accept responsibilities, identify who was responsible for each task, and eliminate hierarchies" (p. 120). Consequently, the academic satisfaction has increased, and fewer students reported feeling that not all team members were equally involved in the assigned tasks.

In their study on agile learning within the Computer Information Systems (CIS) course, Lang (2017) reported three challenges for the instructors implementing this methodological framework – the need for a significant amount of planning, clear yet not overspecified guidelines, and continuous feedback. Surely, given that this pedagogical approach is still novel, it is tempting to "just give instructions on what to do next than to step back and explain why something needs to be done" (p. 18). Therefore, the author suggests not creating a rigid roadmap for the course to allow the flexibility of instruction and making extensive use of online videos to deliver personalized support.

Baird & Riggins (2012) argue that the use of a hybrid project management methodology within a Computer Information Systems (CIS) capstone course is optimal. In other words, the combination of waterfall and agile techniques results in a higher degree of student satisfaction and perception of learning throughout the course. Specifically, at the beginning of the course students were asked to create a waterfall project plan to ease the introduction of agile into the

updated course. After that, students were iteratively working on creating the software prototypes taking into account the continuous instructor and teaching assistants' feedback. Similarly, Sharp & Lang (2018, pp. 48-49) draw attention to the fact that agile pedagogy techniques may be partially incorporated into a waterfall class based on the students' learning needs and the instructor's preferences. For instance, an instructor may utilize only team meetings and reflective journals if he/she does not wish to fully embrace the agile approach.

Although a great number of studies that follow the agile methods have provided examples of being successfully implemented in university-level STEM classes, the research on agile within the context of foreign language teaching remains limited. Namely, the Procedures sections describe the extremely limited application of agile. For instance, Lazorenko & Krasnenko (2020) report on the application of the agile learning approach to teaching English for Specific Purposes (ESP) for Information Technology (IT) students. Although the data collection stages contain pre- and post-test assessment, it seems that the authors opted for a limited application of agile in experimental groups since the iterative and incremental workflow methods have not been documented and reported. Additionally, the description of specific tools utilized to ease the introduction of agile is rather vague, which is limited to "[equipping students] a positive and supportive learning environment, familiar and engaging topics, sufficient time to think, plan and accomplish the tasks, and relevant assessment" (p. 249).

In their study, Bendeck & Toro (2021) execute the application of agile in the field of EFL (English as a Foreign Language) and teaching grammar. The diverse range of proficiency levels was present in one classroom (from A1 Beginner to B2 Upper-Intermediate according to the Common European Framework of Reference for Languages, commonly referred to as the CEFR scale) (Council of Europe, n.d.). In the context of that study, given that one student of a higher

proficiency level was assigned as a team leader with the aim of driving the explanation of grammar topic, it is challenging to support the claim that agile can be leveraged to help students feel like each team member equally contributed to the success of the project. In addition, the agile methodology was implemented in single-outed classes throughout the semester, thus negating the agile learning pursuit of incremental and iterative learning journeys.

This subsection has demonstrated that the research on agile learning practices in EFL classrooms remains limited, with the existing studies failing to describe the iterative and incremental nature of agile. We, therefore, aim to draw upon STEM-related studies and outline which agile practices can be realistically utilized by educators in EAP classrooms, so far lacking in the scientific literature. As pointed out in the introduction to this paper, the incorporation of agile learning is expected to lead to the increased level of student collaboration and the increased self-perceived academic performance in college-level EAP classes.

Chapter 3: Methodology

3.1. Research questions

1. Does the implementation of agile learning practices in the context of college-level EAP classes lead to the increased level of student collaboration?
2. How do agile learning practices correlate with students' self-perceived academic performance in college-level EAP classes?

3.2. Participants and settings

The participants of this study are international undergraduate students enrolled in the in-person four-credit EAP Listening and Speaking course at a public university in the United States. The students are at least 18 years of age. Although the class size is limited to 15 students per university policy, only 10 students were enrolled that semester. Given that one student enrolled later than the rest of the group, the sample size of our study is limited to 9 participants. Nevertheless, the student was able to participate in all classroom activities despite their perceptions not having been collected.

As for the EAP program itself, it is designed to help non-native speakers of English further develop their English language skills and prepare them for academic and social interactions in the United states. In order to obtain permission to take the EAP Listening and Speaking class, students were required to complete the EAP placement test administered by the university. On the CEFR scale (Council of Europe, n.d.), students' English proficiency was at the B2-C1 level. This means that the primary objective of the course is to assist students in further developing their listening and speaking skills for academic purposes, including note-taking, presentation skills, and small group discussions. Table 4 below contains the can-do statements describing the learners at each proficiency level.

Table 4

CEFR Global scale

PROFICIENT USER	C2	Can understand with ease virtually everything heard or read. Can summarise information from different spoken and written sources, reconstructing arguments and accounts in a coherent presentation. Can express him/herself spontaneously, very fluently and precisely, differentiating finer shades of meaning even in more complex situations.
	C1	Can understand a wide range of demanding, longer texts, and recognise implicit meaning. Can express him/herself fluently and spontaneously without much obvious searching for expressions. Can use language flexibly and effectively for social, academic and professional purposes. Can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organisational patterns, connectors and cohesive devices.
INDEPENDENT USER	B2	Can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of specialisation. Can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options.
	B1	Can understand the main points of clear standard input on familiar matters regularly encountered in work, school, leisure, etc. Can deal with most situations likely to arise whilst travelling in an area where the language is spoken. Can produce simple connected text on topics which are familiar or of personal interest. Can describe experiences and events, dreams, hopes & ambitions and briefly give reasons and explanations for opinions and plans.
BASIC USER	A2	Can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g. very basic personal and family information, shopping, local geography, employment). Can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters. Can describe in simple terms aspects of his/her background, immediate environment and matters in areas of immediate need.
	A1	Can understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type. Can introduce him/herself and others and can ask and answer questions about personal details such as where he/she lives, people he/she knows and things he/she has. Can interact in a simple way provided the other person talks slowly and clearly and is prepared to help.

Note. From *Global scale - Table 1 (CEFR 3.3): Common Reference levels*, by Council of Europe, n.d. (https://www.coe.int/en/web/common-european-framework-reference-languages/table-1-cefr-3.3-common-reference-levels-global-scale). Copyright by Council of Europe 2023.

3.3. Instruments

3.3.1. Survey on students' preferences for learning in foreign language classrooms

After students familiarize themselves with the Consent form (Appendix A), the students' preferences for learning in foreign language classrooms were determined by the anonymous survey consisting of 10 items (Appendix B). Within each item, students had to select one out of the three statements which best describes them. The items can be grouped in the following categories – learning habits (LH), collaboration (C), class organization (CO). Given that all

surveys are completely anonymous, this introductory survey was able to provide insights into students' preferences for learning in foreign language classrooms.

3.3.2. Survey on students' perception of collaboration opportunities offered in class

The students' perception of collaboration opportunities offered in college-level EAP classes was determined twice at the end of each learning module (one – adhering to the waterfall method, another one – the agile framework). This anonymous survey consisted of 20 items (Appendix C). The responses were based on the Likert scale of 1 to 4 (ranging from "strongly disagree" to "strongly agree") and are divided in the following categories – collaboration (C) and class organization (CO). The optional open-ended question at the end of the survey was provided for those who wished to communicate further feedback regarding their classroom experience.

3.3.3. Complementary survey on agile learning practices

The students' perception of the agile learning practices was collected through the anonymous survey which consisted of 8 items (Appendix D). These items were to be rated on the Likert scale of 1 to 4 (labeled from "strongly disagree" to "strongly agree"). Each item measured students' perception of agile-specific procedures or tools used in the classroom.

3.3.4. Students' self-perceived academic performance rubrics

In order to gauge students' self-perceived academic performance in both learning modules, the learners were asked to fill out the self-assessment rubric (Appendix E) after completing final group presentation activities at the end of each learning module. The rubric contained the following categories – content, organization/transitions, time management, group dynamics, visual aids, vocabulary/language use, engagement with the audience. In order to incentivize participation in the study, the students received full credit for having completed the assignments.

3.4. Procedure

The quasi-experimental method was employed to evaluate the effect of agile learning practices on student collaboration and academic performance in the EAP Listening and Speaking classroom. All data was recorded with the help of anonymous surveys which were shared via the Qualtrics platform. The Consent Form (Appendix A) distributed prior to that. Each survey took 5 to 10 minutes to be completed. The scheduling of survey distribution is outlined later in this subsection.

When it comes to the course schedule, there were two in-person classes a week. The duration of each class was 110 minutes. The research project was conducted in the span of 2 weeks, totaling 4 classes.

The content of the course is based on the National Geographic Learning textbook, *Pathways: Listening, Speaking, and Critical Thinking Book 3* (Chase et al., 2018). The first two-lesson learning module followed a more plan-based instructional approach which is outlined by the authors of the textbook. In turn, the second two-lesson learning module utilized agile learning practices:

1. Students worked in teams of 3-4, each with its own Scrum Master (one of the students who streamlined the team effort and updated the progress board).
2. The instructor presented the product backlog, offering formative feedback throughout the whole project.
3. Students held a 10-minute stand-up to plan their work for the class(es).
4. The lessons were broken down into several parts, each indicating different stages of the sprint (going over the product backlog, sprint, sprint review, and sprint retrospective).

At the beginning of the course, all students were invited to fill out the anonymous survey regarding their preferences for learning in foreign language classrooms (Appendix B).

During the first learning module (Lessons 3 and 4), as the instructor of the course, I conducted classes that follow the waterfall instructional approach which is outlined by the authors of the textbook used in EAP Listening and Speaking (Chase et al., 2018). It is critical to note that the different instructional approaches did not disturb the attainment of the anticipated learning outcomes outlined in *Pathways: Listening, Speaking, and Critical Thinking Book 3* (Chase et al., 2018). The agile learning practices implemented in the second learning module were only intended to increase the level of collaboration within each study group.

As part of the assessment at the end of the learning module, students did a group presentation at the end of Lesson 4. After that, each student filled out the self-assessment rubric (Appendix E) as well. The anonymous Qualtrics survey was distributed at the end of the class to gauge students' perception of collaboration opportunities offered in college-level EAP classes (Appendix C).

For Lessons 5-6, I incorporated agile learning practices into the course. Specifically, these practices included: students planning their workflow in class (sprint planning), completing the tasks at their own pace within the set timeframe (sprint), presenting their group projects (sprint review), reflecting on their presentations (sprint retrospective). Similarly, the students did a group presentation at the end of Lesson 6. During the reflection part (Sprint Retrospective), students filled out the self-assessment rubric (Appendix E). After that, students were invited to fill out the posttest anonymous Qualtrics survey (Appendix C). In addition, they were offered a complementary survey on agile learning practices (Appendix D).

The procedures of the research project along with the lesson plans are outlined in Figure 5 below.

Figure 5

Agile learning: procedure

Lesson number	Learning module	Learning outcomes	Lesson plan
3	1	Recognize a speaker's attitude. Take notes and review them.	1. Distribute consent forms and invite students to fill out the anonymous Qualtrics survey regarding their preferences for learning in foreign language classrooms (Appendix B). 2. Introduce students to the concept of note-taking. 3. Small group discussion (ex. A-B, p. 6). 4. Individual listening activities (ex. C-D, pp. 6-7). 5. Small group discussion (ex. E-G, p. 7).
4	1	Quote statistics. Describe statistics.	1. Individual grammar activity (p. 8). 2. Small group discussions (ex. A, p. 8). 3. Individual vocabulary activity. 4. Small group project (ex. B, p. 8) 5. Presentation of the small group project. 6. Invite students to fill out the self-assessment rubric (Appendix E). 7. Invite students to fill out the survey on perceptions of collaboration opportunities (Appendix C).
5	2	Recognize and discuss pros and cons. Utilize question intonation. Describe data.	**Sprint planning** 1. Introduce the product backlog (pp. 9-13). 2. Students hold a 10-minute stand-up to plan their work in this class. **Sprint** 3. Students work in small groups. **Sprint Review** 4. Students present the small group project (p. 11) and receive feedback from other students and the instructor. **Sprint Retrospective** 5. Students reflect on their progress and team work (10 minutes).
6	2		**Sprint Planning** 1. Students hold a 10-minute stand-up to plan their work in this class and adjust the product backlog introduced previously (Lesson 5). **Sprint** 2. Students work in small groups. **Sprint Review** 3. Students present the small group project again (p. 11) and have a Q/A session with other groups. **Sprint Retrospective** 4. Invite students to fill out the self-assessment rubric (Appendix E). 5. Students reflect on their progress and team work (10 minutes). 6. Invite students to fill out the survey on perceptions of collaboration opportunities (Appendix C). 7. Invite students to fill out the complementary survey on agile learning practices (Appendix D).

Note. While the first learning module followed the waterfall instructional mode, the second one utilized the agile learning practices (sprint planning, sprint, sprint review, sprint retrospective). The steps in red indicate the instructor administering the instruments of the study.

3.5. Data analysis

The two research questions were answered by collecting and analyzing the data from the surveys (Appendices B-D) and assessment rubrics (Appendix E). The deductive approach was employed for data analysis.

Chapter 4: Results

4.1. Self-perceived level of collaboration (RQ1)

Based on students' perceptions of collaboration during the class activities, a paired t-test showed that the difference between the conventional teaching method (M=3.01; SD=0.68) and the agile teaching method (M=3.14; SD=0.73) was not statistically significant (t=0.65; df=8; p=0.53). Although the class organization in an agile learning classroom was slightly favored, the results of a paired t-test did not indicate a significant difference of students' perception (t=1.7; df=8; p=0.13) between the classrooms following the conventional teaching method (M=3.07; SD=0.65) and the agile learning one (M=3.46; SD=0.45). The outlined descriptive statistics are reported in Table 5.

Table 5

Descriptive statistics for RQ1 (n=9)

	conventional classroom		**agile learning classroom**		***t***	***df***	***p (2-tailed)***
	Mean	**Std. deviation**	**Mean**	**Std. deviation**			
perception of collaboration	3.01	0.68	3.14	0.73	0.65	8	0.53
perception of class organization	3.07	0.65	3.46	0.45	1.7	8	0.13

4.2. Self-perceived academic performance (RQ2)

As displayed in Table 6 below, the results of the paired t-test indicated no statistically significant difference (t=2.1; df=8; p=0.08) between students' self-perceived academic achievement in a conventional teaching context (M=4.02; SD=0.87) and the one adhering to agile learning (M=4.43; SD=0.47).

Table 6

Descriptive statistics for RQ2 (n=9)

	conventional classroom		agile learning classroom		*t*	*df*	*p (2-tailed)*
	Mean	**Std. deviation**	**Mean**	**Std. deviation**			
self-perceived academic performance	4.02	0.87	4.43	0.47	2.1	8	0.08

On the other hand, a Pearson correlation showed that, in the conventional teaching method condition, students' perceptions of collaboration and class organization (*M*=3.02; *SE*=0.22) were positively correlated (*r*=0.77; *p*=0.02) with their self-perceived academic performance (*M*=4.02; *SE*=0.29). By contrast, a correlation between students' perception of collaboration and organization (*M*=3.24; *SE*=0.2) and their self-perceived academic performance (*M*=4.43; *SE*=0.16) was not statistically significant (*r*=0.57; *p*=0.11) in the agile learning context. The results are reported in Figure 6 below.

Figure 6

Pearson correlation: conventional class (left) and agile learning class (right)

Chapter 5: Discussion

This study examined the impact of agile learning practices on students' perceptions of collaboration as well as the correlation between the agile learning methodology and self-perceived academic performance in the context of college-level EAP classes.

5.1. Perceptions of collaboration opportunities (RQ1)

The results of the experiment did not find clear support for the hypothesis that the implementation of agile learning practices in the college-level EAP classroom leads to the perception of the increased level of collaboration opportunities. According to the students' replies to the survey that assessed their preferences for learning (Appendix B), the participants of the study expressed a strong preference for learning from teachers, with 8 out 9 respondents favoring that option (Appendix B, Q1). This reply may serve as an indication that an overwhelming majority of our participants are used to a waterfall-based learning environment where the focus is placed on individual learning, with the instructor acting as the main source of knowledge. Consequently, a shift away from waterfall learning to the novel methodology that involves collaborative knowledge building (Scardamalia & Bereiter, 2006) might be perceived as challenging. Without prior exposure to agile learning or a sudden shift to this approach, students may not fully understand what agile learning is and how it can promote collaboration in college-level EAP classrooms. It has been recognized by Von Wangenheim et al. (2012) that teaching learners in a compressed and fast-paced way presents a challenge. Coupled with students' lack of experience with the novel approach, the implementation of the autonomous two-lesson learning module could explain the findings related to RQ1.

There also exists a possibility of students feeling intimidated by the increased level of responsibility that comes with a more collaborative learning environment (Lee et al., 2015). In

contrast to the waterfall methodology, students are expected to act as a self-regulating team that manages their own learning within the agile framework (Noguera et al., 2018). In other words, the responsibility of a teacher becomes similar to those of a Product Owner (one of the stakeholders who defines and communicates the product backlog to the team) who provides guidelines and clarifications about the assigned project, monitors teams' activity, and evaluates the progress of the project development.

In conclusion, we can state that the implementation of the agile learning methodology poses a number of challenges, one of which is the learner's expectation in regards to collaboration. The results of the current study did not reveal that agile learning simplifies group regulation and aids in empowering students as self-organized teams. However, the proposed framework may be revised by addressing the limitations of the study which are outlined in one of the subsections of this chapter.

5.2. Self-perceived academic performance (RQ2)

It is worth mentioning that the first survey on students' preferences for learning in foreign language classrooms (Appendix B) casts light on the academic-performance-related expectations that EAP students had upon enrolling in the EAP Listening & Speaking course. The results of the survey (Appendix B, Q8) revealed that the learners of this project strongly favor having a step-by-step instruction from a teacher when completing a class project (7 out of 9 respondents selected that option). Additionally, the same number of respondents expressed the idea that teachers are the ones who are capable of helping learners improve their language skills (Appendix B, Q3), rejecting the potential benefits of peer-learning.

Similar concerns were raised by Lang (2017) in their study, in which the instructor felt tempted to provide more explicit instructions to each student on how to complete the project due

to learners having preconceived notions of class organization. Our analysis found evidence for the aforementioned claim as students' perceptions of collaboration and organization were positively correlated with their self-perceived academic performance (p=0.02) during the intervention aligning with the waterfall methodology. In their reply to an open-ended item (Appendix C, Q21), one of the students defined collaboration as "*it means we divide the task to do it effectively and after [that] we complete [it] individually.*" In other words, students do not feel comfortable having their academic performance be the reflection of team performance, thus strongly preferring to work individually. This might explain why the proposed experimental approach that is based on agile learning practices and extensive collaboration as a self-organizing team did not yield the same statistically significant results (p=0.11).

5.3. Students' opinions on specific agile learning tools

It remains unknown to which degree the findings of this study were impacted by the aforementioned limitations, but the results of the Complementary Survey on Agile Learning Practices (Appendix D) may be used to gauge students' perceptions of specific agile practices that could be potentially applicable in both waterfall and experimental classrooms.

Table 7

Mean values for the agile learning practices (based on Appendix D)

Mean	Question ID	Description
3.56	D7	Retrospectives provided an opportunity for our team to reflect on our progress.
3.44	D5	Reviews provided an opportunity to showcase our progress.
3.44	D6	Reviews provided an opportunity to receive feedback from others.
3.33	D1	The product backlog helped us visualize our goals.
3.11	D3	Trello helped us keep track of our progress.

Mean	Question ID	Description
3.11	D4	The team meeting at the beginning of each class helped me catch up with my classmates on our progress in class.
3.11	D8	I enjoyed working in my team.
3.00	D2	Working in teams helped us work autonomously.

The results of the survey confirm that having a timebox for team reflection on the task completion and efficiency of the internal processes (i.e., the degree to which the group managed to work as a self-organizing team) is perceived favorably (item D7). As Noguera et al. (2018) note, allowing students to have a dedicated lesson stage for such kind of reflection is "very useful for coordinating work and anticipating deviations" (p. 125), as the group is faced with a task of self-assessing their productivity and autonomy. It is crucial to emphasize that retrospectives should not devolve into mere formative assessments of what has been learned, as this would undermine the objective of the activity.

Similarly, a strong preference for a variation of the final presentations stage was indicated (items D5 and D6). Unlike the Q&A (questions-and-answers) session at the end of the lesson in the waterfall classroom, the students were tasked with providing actionable feedback for other groups to utilize to fine-tune their ideas for the second presentation. The ability to collect and address customer feedback is an invaluable soft skill that is sought by employers (Podeschi, 2016). Therefore, challenging students to give constructive criticism that is devoid of vague descriptions brings real-world experiences into an agile classroom.

As for Trello, a popular free project management tool that was introduced as a tool for tracking task progress and completion, it is important to correctly interpret the results of the survey (item D8). Since the agile learning practices were implemented over the span of 2 classes,

its usage was limited, thus leaving insufficient time for the learners to fully utilize its features. Contrary to the anticipated student engagement with the user-friendly design, as the instructor of the course, I had to often resort to providing tips and comments in Trello in order to boost its use. Therefore, this limited application of Trello and its relatively low student ranking demonstrate that despite the potential of this tool to enhance collaborative learning in foreign language classrooms, the timeframe of the project should be accounted for in order for Trello to be integrated in an appropriate manner to optimize its effectiveness.

5.4. Limitations

Regarding the limitations of the current study, it could be argued that the limited time frame of our interventions, totalling four 110-minute classes, may have impacted its findings. Although Serrador & Pinto (2015) claim that "neither project complexity nor experience of the project team significantly moderates the relationship between Agile and project success" (p. 1049), we cannot claim the sustainability of the observed effects due to participant errors (Cooper & Schindler, 2001). In other words, the short-term intervention coupled with the small sample size (n=9) make it difficult to determine the true effect of the novel teaching approach on perceived collaboration opportunities.

To further illustrate the importance of long-term interventions and data collection efforts, we referred to systematic reviews of Lopez-Alcarria et al. (2019) and Sharp & Lang (2018). In their overview of the use of agile as a pedagogical approach, the complete course redesign measures are frequently highlighted. For instance, a Computer Engineering Degree program (Fernanda et al., 2018, as cited in Lopez-Alcarria et al., 2019) is exemplified as the initiative to apply the agile framework to academic activities in order to develop such competencies as organizational, teamwork, communication, and leadership skills. Accordingly, the updated

course was taught by 6 teachers in each respective classroom, with a total number of 250 students having completed satisfaction surveys over the period of 3 semesters. Similarly, Sharp & Lang (2018) reiterate that semester-long projects are best suited for agile efforts to "produce significantly higher levels of students' self-efficacy and actual comprehension of Agile concepts" (p. 48). Consequently, the students of our study might not have had the opportunity to fully experience agile learning due to the short-term nature of our interventions. Specifically, the learners were exposed to the novel teaching method during the two consecutive classes.

Additionally, the investigation of students' perceptions of collaboration in EAP classes was hindered by the small sample size of our study (n=9). When comparing the results of the current study to those published previously in the foreign language teaching setting, the large sample size must be highlighted. It appears that the studies of Lazorenko & Krasnenko (2020) (n=72) and Bendeck & Toro (2021) (n=108) were able to recruit a higher number of students. Similarly, the larger population size seems to be commonplace in STEM studies (Baird & Riggins, 2012; Gonzalez-Marcos et al., 2016; Noguera et al., 2018) on the effects of agile learning on team regulation, with the number of participants surpassing a hundred students. Even though we did not replicate the previously reported studies, it can be hypothesized that conducting the current study during the whole academic semester (with agile learning modules to be introduced in multiple learning modules) and with a large sample should be considered to determine whether the results are consistent across language teaching contexts. From this standpoint, the results of our project can be considered as the grounds for further research work on agile learning in the college-level EAP context.

Chapter 6: Conclusion

This study attempted to find correlation between the implementation of agile learning and the perceived level of collaboration and academic performance from the standpoint of students in the college-level EAP context. In order to address several research questions, the participants of the study were exposed to the intervention, a two-lesson learning module adhering to the agile framework, with a series of surveys and self-assessment rubrics that followed.

The findings did not provide conclusive evidence to support the idea that implementing agile learning practices in the college-level EAP classroom would lead to students perceiving the increase in collaboration opportunities. Likewise, we were not able to identify a statistically significant correlation between agile learning and students' self-assessment with regards to academic performance. On the other hand, a number of agile learning practices were welcomed by the participants of the study, suggesting that their incorporation into foreign language classrooms could increase students' overall satisfaction with any course.

Although some limitations of our study (a small sample size, short-term nature of the intervention, and preferences for learning in foreign language classrooms) may partially explain the obtained study results, further research should be conducted. Therefore, the findings can be seen as the foundation for additional research on agile learning in the college-level EAP settings.

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Appendix A: Consent Form

Project: Agile learning: students' perceptions of collaboration

Researcher

Galyna Arabadzhy
Department of English
WB 123A
galyna.arabadzhy@go.stcloudstate.edu

Advisor

Choonkyong Kim
Department of English
WB 101
ckim@stcloudstate.edu

You are invited to participate in this study to investigate whether agile learning practices (which are nested within project-based learning) increase students' perceived collaboration opportunities and academic performance in college-level English for Academic Purposes (EAP) classes. You were selected as a possible participant because you are enrolled in an EAP course offered at this university.

- This is NOT a test of your language ability, and there are NO **foreseeable risks** associated with participation in this study.
- **All surveys are anonymous**. Your name will NOT be used in data collection, analysis, and report.
- Your participation is **voluntary**. You may withdraw at any time.
- **If you decide to participate**, you will be asked to complete a series of Qualtrics surveys within the 3-week period. Each survey will be completed in class and will take 5-10 minutes.
- Your decision whether or not to participate will NOT affect your current or future relations with the university, the researcher, or the advisor.
- There is NO reward for contributing to the study.
- Please find below the **anticipated benefits** associated with this study:

1. You will likely consider agile learning practices (which are nested within project-based learning) to be offering more opportunities for collaboration in college-level EAP classes.
2. Your self-perceived academic performance in college-level EAP classes is likely to increase if agile learning practices are incorporated.

- If you are interested in learning the results of the study, feel free to reach the researcher at galyna.arabadzhy@stcloudstate.edu at the end of the current semester.
- If you have any additional questions, please contact the researcher at galyna.arabadzhy@stcloudstate.edu or the advisor at ckim@stcloudstate.edu.

If you give your permission to use the data for research, please sign below.

Are you at least 18 years of age? NO ___ YES ___

If you answered NO, please stop. Thank you!

If you answered YES, please continue.

Name in print _____

Date _____

Signature _____

Appendix B: Survey on Students' Preferences for Learning in Foreign Language Classrooms

Which statement best describes you or your preferences in foreign language classrooms? Select one option.

Learning-habits-related

1. I like learning …

A. from textbooks.

B. from teachers.

C. by doing my own research.

2. If I am stuck, I would like my teacher …

A. to tell me what to do.

B. to give me a hint on what I could do.

C. to give me time to figure it out.

3. I think …

A. I can help my classmates improve their language skills.

B. my classmates can help me improve my language skills.

C. my teacher can help me improve my language skills.

4. I …

A. believe that foreign language classrooms help me gain valuable skills that I will use in my future workplace.

B. don't believe that foreign language classrooms help me gain valuable skills that I will use in my future workplace.

C. believe that foreign language classrooms help me gain valuable skills but I won't use them in my future workplace.

Collaboration-related

5. I like doing group projects …

A. when we can choose our groups.

B. when the teacher assigns us to groups.

C. in general. It doesn't matter if we can choose our groups or the teacher assigns us to groups.

6. I like to work …

A. alone on class projects.

B. with a classmate on class projects.

C. in a group on class projects.

7. I like …

A. listening to group discussions of others.

B. participating in group discussions.

C. leading group discussions.

Class-organization-related

8. I like having …

A. a step-by-step guide from a teacher when I need to complete a class project.

B. the complete freedom to find a way to complete a class project.

C. some guidance but I like having the freedom to find a way to complete a class project.

9. I like sitting …

A. alone in class.

B. next to someone in class.

C. next to a group of classmates in class.

10. I …

A. like being able to move around my classroom during a lesson.

B. don’t want to move around my classroom during a lesson.

C. don’t have a preference – I feel fine moving around my classroom and sitting in one spot during a lesson.

Appendix C: Students' Perception of Collaboration Opportunities Offered in Class

On a scale of 1 to 4 (1 – strongly disagree, 4 – strongly agree), how well do the statements below represent you?

Collaboration-related

1. There are opportunities for group discussion in every single class.
2. There are opportunities for collaboration on group projects with other students in every single class.
3. I feel comfortable participating in discussions with my classmates.
4. I feel comfortable working together on group projects with my classmates.
5. I feel comfortable sharing my ideas with my classmates.
6. I enjoy participating in discussions with my classmates.
7. I enjoy working together on group projects with my classmates.
8. When working in a group, we have the chance to reflect the edits in our project and present it again.
9. When working in a group, the roles of each team member are clearly defined.
10. When working in a group, each team member evenly contributes to the successful project completion.
11. When working in a group, I feel involved in making project decisions.
12. When working in a group, it is easy for me and my team members to decide who will be completing each task.
13. When working in a group, we take some time to plan our workflow.
14. When working in a group, we take some time to reflect on our progress.

Class-organization-related

15. There is enough time allocated for discussions in class.
16. There is enough time allocated for collaboration with other students on group projects.
17. The teacher creates an inclusive environment for discussions.
18. The teacher encourages us to collaborate with our classmates.
19. I am gaining valuable skills that I will use in my undergraduate studies.
20. I am gaining valuable skills that I will use in my future workplace.

What does collaboration mean to you? Define it in 1-2 sentences.

Optional: If you wish to provide additional feedback on the previous and today's classes, please use the space below.

Appendix D: Complementary Survey on Agile Learning Practices

On a scale of 1 to 4 (1 – strongly disagree, 4 – strongly agree), how well do the statements below represent your opinions?

1. The product backlog helped us visualize our goals.
2. Working in teams helped us work autonomously.
3. Trello helped us keep track of our progress.
4. The team meeting at the beginning of each class helped me catch up with my classmates on our progress in class.
5. Reviews provided an opportunity to showcase our progress.
6. Reviews provided an opportunity to receive feedback from others.
7. Retrospectives provided an opportunity for our team to reflect on our progress.
8. I enjoyed working in my team.

Appendix E: Students' Self-Perceived Academic Performance Rubric

	F	D	C	B	A
Content	The presentation was not on topic.	The presentation was not on topic.	The presentation was mostly on topic.	The presentation was on topic, with few key elements missing.	The presentation was on topic.
Organization/ Transitions	The presentation came off as being impromptu, with no organization displayed.	The presentation lacked organization and slide transitions.	The presentation lacked organization. Slide transitions were employed.	The presentation was clearly organized. Slide transitions were lacking.	The presentation was clearly organized. Slide transitions were employed.
Time Management	The presentation was extremely long / short.	The presentation was very long / short.	The presentation was rather long / short.	The presentation was a bit long / short.	The presentation met the time frame of the assignment.
Group Dynamics	Only one group member presented the material.	Not all group members presented the material. Additionally, it was not equal timewise.	All group members presented the material, but it was not equal timewise.	All group members presented the material almost equally timewise.	All group members presented the material in an equal way timewise.
Visual Aids	The visual aids were not present.	The visual aids were present. They were not crafted according to the project requirements.	The visual aids were present. However, they were not crafted according to most of the project requirements.	The visual aids were present and crafted according to most of the project requirements.	The visual aids were present and crafted according to the project requirements.
Vocabulary/ Language Use	Essentially translation. Major problems in simple constructions.	Limited vocabulary range. Simple constructions. Several errors.	Adequate vocabulary range. Effective but simple constructions.	Sophisticated vocabulary range. Effective but simple constructions.	Sophisticated vocabulary range. Effective complex constructions.

	Dominated by errors.		Several errors.	A few errors.	Few errors.
Engagement with the Audience	The group members did not maintain eye contact with the audience. The group members did not engage in the QA session.	The group members did not maintain eye contact with the audience. The group members barely engaged in the QA session.	The group members did not maintain eye contact with the audience. Additionally, the group members engaged in the QA session.	The group members maintained eye contact with the audience most of the time. Additionally, the group members engaged in the QA session.	The group members maintained eye contact with the audience. Additionally, the group members engaged in the QA session.

Appendix F: IRB Approval

Institutional Review Board (IRB)

720 4th Avenue South AS 101, St. Cloud, MN 56301-4498

IRB PROTOCOL DETERMINATION:

Exempt

December 19, 2022

To: Galyna Arabadzhy
Email: galyna.arabadzhy@go.stcloudstate.edu

Faculty Mentor/Advisor: Chookyong Kim

Project Title: Agile Learning: Students' Perceptions of Collaboration

The Institutional Review Board has reviewed your protocol to conduct research involving human subjects. **Your project has been: Approved**

Expiration Date: **N/A**

SCSU IRB#: **44875432**

Please read through the following important information concerning IRB projects:

ALL PROJECTS:

- The principal investigator assumes the responsibilities for the protection of participants in this project. Any adverse events must be reported to the IRB as soon as possible (ex. research related injuries, harmful outcomes, significant withdrawal of subject population, etc.).
- The principal investigator must seek approval for any changes to the study (ex. research design, consent process, survey/interview instruments, funding source, etc.).
- The IRB reserves the right to review the research at any time.

ADDITIONAL FOR EXPEDITED AND FULL BOARD REVIEW PROJECTS:

- The principal investigator must submit a Continuing Review/Final Report form in advance of the expiration date indicated on this letter to report conclusion of the research or request an extension.
- Approved consent forms display the official IRB stamp which documents approval and expiration dates. If a renewal is requested and approved, new consent forms will be officially stamped and reflect the new approval and expiration dates.

If we can be of further assistance, feel free to contact the IRB at 320-308-4932 or email ResearchNow@stcloudstate.edu and please reference the SCSU IRB number when corresponding.

Sincerely,

IRB Chair:
William Collis-Prather

Program Director
Applied Clinical Research

IRB Institutional Official:
Dr. Claudia Tomany

Associate Provost for Research
Dean of Graduate Studies