

AILIT

Background and literature review



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Introduction

The ALLIT project is an Erasmus + cooperation partnership aiming to prototype an AI-powered platform scaffolding student's writing and letting students read and edit each other's texts across borders through machine translation. The project will develop both engaging scaffolding material (video and other media) and an engaging game design.

The project reunites 5 university partners (Universitet i Stavanger, Universidade de Aveiro, Universiteit Twente, Universitat Autònoma de Barcelona and Dublin City University) and 3 schools (Scoil Mhuire Gan Smál, Fjelltun skole and Escola les Llisses).

This document has been prepared by the five university partners. It presents some background for the project.

- Part I describes the educational systems of the different countries where the platform will be piloted.
- Part II describes the theoretical background for the project.
- Part III presents some common ways of scaffolding students' writing in the participating countries.

Content

Part I Context.....	5
1. Ireland.....	5
2. Norway	6
3. Portugal	7
4. Catalonia.....	8
Part II Background	9
1. What is scaffolding?	9
2. Motivation and engagement.....	10
2.1 Situational and personal interest	10
2.2 Motivation as self-determination.....	11
2.3 Engagement as outward manifestation of motivation	11
2.4 Scaffolding engagement in writing.....	12
2.5 Design questions for the AILIT environment related to engagement.....	13
3. The process of writing	15
4. Conditions where writing thrives	18
Part III Scaffolding practices	20
1. Model texts.....	20
2. Text lliure	21
3. Picture-elicited story writing:	21
4. Self-Regulated Strategy Development (SRSD).....	22
5. Writing workshop	23
6. Collaborative writing	24

Part I Context

In this part we present the educational systems and entailing educational traditions of the participating countries, in order to provide an understanding of similarities and differences that will be important contextual information in the cooperation.

1. Ireland

As home to many of the world's most renowned writers, Ireland has a rich literary tradition. The Irish language (*Gaeilge*), which continues to be taught in primary and secondary schools, has made a lasting mark on written and spoken language throughout the country. In recent years, this rich linguistic tapestry has been enhanced as Ireland has become an increasingly diverse and plurilingual society. Known as the 'land of saints and scholars' since the 5th century, Ireland has maintained a strong record of educational excellence.

Literacy education in Ireland is informed by a range of national-level policies that are contextualised and enacted at local, school-level. The national (primary) school system in Ireland dates to 1831, with free second-level education initiated in 1967. Broad educational policy is set centrally by the [Department of Education](#), host to the government-appointed Minister for Education. Curricular policy in Ireland is led by the [National Council for Curriculum and Assessment](#) (NCCA), which advises the Minister for Education on curriculum reform. The national curriculum is the product of research and consultation involving a wide range of educational partners including representatives of parent bodies, teacher unions, higher education institutions, industry representatives, and, increasingly, students' voice.

A developmentally appropriate focus on writing is evident throughout the various school levels in Ireland. At the early childhood level, curriculum is informed by *Aistear* (NCCA, 2009), a play-based framework that informs teaching for children aged 0-6. One of the four themes of *Aistear*, 'communicating', encourages children to convey meaning through mark-making and early writing. The *Primary Language Curriculum* (NCCA, 2019), the curriculum for English and *Gaeilge*, builds on these playful approaches, setting out broad learning outcomes to be achieved at the primary level for children aged 5-12. Based on a series of research reports (e.g. Kennedy et al., 2012), the curriculum incorporates a systematic focus on writing at the word-level (e.g. spelling, phonics), sentence-level (e.g. conventions of print and sentence structure) and text-level (e.g. genre), as well as the affective domain (e.g. motivation and choice). This curriculum maintains the emphasis on a process-based approach to writing that was first endorsed in the previous curriculum for English (Department of Education and Science, 1999). Literacy is a key skill that crosses all subject specifications in lower-secondary education (Department of Education and Skills, 2015), while writing (composing) is a major focus of the specification for English and *Gaeilge* at this level. Standards in teaching and learning are periodically evaluated by the [Department of Education Inspectorate](#). The National Literacy and Numeracy Strategy (Department of Education and Skills, 2011) placed a heightened emphasis on literacy across all sectors. This policy is currently undergoing review, with a successor strategy due for consultation and enactment in 2023.

Large-scale national or international assessment data are not available for writing outcomes in Irish schools. Assessments of reading have placed Irish students in the upper echelons of achievement in recent years. The 2016 PIRLS survey of reading indicated that only two other countries significantly outperformed Ireland's ten-year-olds (Eivers et al., 2017). Similarly, the 2018 PISA survey of fifteen-year-olds showed that Ireland ranked 4th out of 36 OECD countries and 3rd out of 27 EU countries (McKeown et al., 2019).

Teacher education in Ireland is regulated by the [Teaching Council](#), a representative agency of the Department of Education. The Teaching Council sets standards for initial teacher education (ITE), teacher induction and teacher professional learning/development. Most ITE programmes are housed within Higher Education Institutions and include a blend of university-based and school-based learning. Literacy education is a mandatory requirement of all ITE programmes at primary and post-primary level. Professional development for in-service teachers is provided at a national level through the [Professional Development Service for Teachers](#) (funded by the Department of Education), though there is significant PD provided at local- and school-level throughout the country.

2. Norway

Norwegian literacy instruction is plurilingual in its essence, relying on both the two official written languages, *bokmål* and *nynorsk*. With their roots back in the nineteenth centuries, these (mutually comprehensible) languages incarnate two different approaches to getting “our own” written language after national independence was achieved in 1814. Gradually “norwegifying” the Danish written language was the approach that ultimately led to today’s *bokmål*. The philologist Ivar Aasen (1813-1896) chose a different path, that of starting afresh, synthesizing a language from the various spoken languages existing locally, using the old Norse language as a benchmark. This resulted, after many waves of modernizing, to what is today called *nynorsk*. School children receive their instruction in the language form of their (parents’) choice, and all pedagogical material must be available in both forms. Even so, children are expected, from the early grades, to be able to listen to and discuss literature in both languages (2nd grade) and to explore similarities and differences between them (4th grade). In the higher grades their mastery of their second language is an important part of their summative assessment. In addition, in some areas, students get their instruction in one of the Sámi languages. All students are expected to read texts translated from the Sámi languages.

Against this plurilingual backdrop, students enter first grade of school in the year they turn six. Most of them at that stage have behind them already 5 years of non-mandatory, preprimary education (kindergarten). Although many activities in kindergarten are oriented towards language and literacy, formal reading instruction starts in grade 1. Schooling is divided in three stages: Grades 1 to 7, 8 to 10 and 11 to 13. The first, “Children’s school” is relevant for this project.

Instruction is based on the curriculum published by the [Ministry of Education and Research](#), with the [Directorate of Education and Training](#) acting as executive agency. Since 2006, the curriculum has included the concept of “basic skills”, with reading and writing among them. The subject “Norwegian” has a “special responsibility” for instructing the students in these skills. In this curriculum for the Norwegian subject, reading and writing as basic skills are defined as follows:

“Reading in Norwegian means to read both on paper and digitally. It means reading and reflecting on fiction and non-fiction, mastering reading strategies adapted to the purpose of the reading and evaluating texts critically [...].”

“Writing in Norwegian means to express oneself in a wide variety of fiction and non-fiction genres. It means developing personal forms of written expression, mastering writing strategies, orthography and text structuring. Writing is also a way of developing and structuring thoughts and a method for learning [...].”

Literacy is monitored to some extent through state-sponsored assessment schemes. In 1st and 3rd grade, students take a National screening test in reading (mandatory only in 3rd grade). The purpose of this is to identify students at risk. Results are not reported or aggregated, but used locally for

following up the students at risk. In grade 5 (and 8 and 9), students pass a mandatory national test in reading (and mathematics and English). The purpose of this is to support formative assessment and adapted instruction, as well as to ensure quality. Results are aggregated and published, and give a picture how the population of fifth-graders as a whole is doing in reading. No formative national testing schemes exist for writing. Norway also participates in international testing schemes such as PISA and PIRLS. In addition, many commercial literacy tests of varying quality are available and widely used in schools.

3. Portugal

The birthplace of Luís Vaz de Camões, Fernando Pessoa, and of the Nobel-prize winner José Saramago, Portugal is a country of famous writers. Yet, for many decades, literacy levels were a concern. Until the 1970s compulsory education consisted only of three years for girls and four years for boys. Studying beyond this short period of time was a privilege of wealthier families. It was only in 1973, shortly before the end of the *Estado Novo* regime, a dictatorship that lasted over 40 years, that reform brought the democratization of education to the country.

Currently, formal compulsory education comprises 12 years organized in three sequential cycles of basic education – 1st cycle (grades 1 to 4, ages 6 to 9), 2nd cycle (grades 5 to 6, ages 10 to 11), and 3rd cycle (grades 7 to 9, ages 12 to 14) – and secondary education (grades 10 to 12, ages 15 to 17). Pre-primary education, although attended by an increasing number of children aged 3 to 5, is still not mandatory. Reading and writing instruction begins in the 1st cycle of basic education (grade 1, age 6).

School governance in Portugal is fairly centralized, meaning that the main lines of action about the curriculum, national examinations, and teacher recruitment are defined centrally by the Ministry of Education. Since 2017, the Ministry of Education has been leading a series of reforms of school curricula and legislation. These started with the publication of the document *Perfil dos alunos à saída da escolaridade obrigatória* (Students' profile by the end of compulsory schooling; Ministry of Education Portugal, 2017), which describes the competencies Portuguese students should possess by the time they finish school (usually aged 18 years old). The document identifies 10 competency areas, including “Languages and Texts”. By the time they finish compulsory schooling, students are expected to have mastered the codes that will enable them to read and write. In particular, they should understand, interpret and express facts, opinions, concepts, thoughts and feelings, orally or in writing, or through other codes.

In the 1st cycle of basic education (children aged 6 to 9), students are expected to master basic techniques for writing texts with a variety of communicative purposes (telling stories, reporting personal experiences, elaborating responses to questions in a school context, writing letters/emails to friends and family, expressing an opinion). This implies the development of specific competences (write a text with an appropriate discursive organization and with lexical diversity; comply with norms, such as orthographic norms, and use the specific signs to represent language in writing) (Ministério da Educação, 2018).

Regarding assessment, Portugal has come a long way since 1974, when it had the lowest literacy rate in Western Europe. In 2018, the results of Portuguese students in PISA tests, more specifically in Reading Literacy, were shown to be above the OECD average, although not with a “statistically significant difference” (2018, p. 1). Regarding large-scale national assessment, it is possible to observe an increasing yet low national average in the subject of Portuguese Language. In the area of writing, there is still a long way to go. Recent results show that in the 2nd year of the 1st cycle (around age 7),

in Parameters C (Textual organisation and cohesion) and D (Morphology, syntax and punctuation) only 22.4% of the students write an organised and cohesive text, use correlation of verb tense, as well as synonyms and pronouns that ensure reference chains (IAVE, 2022, p. 25). As for Parameter C, results of students in the 5th year of 2nd cycle (around age 10) show that "only 17.6% (...) wrote a text in which they fully complied with the instruction (...) used appropriate vocabulary and ensured the progression of the information". Furthermore, "only 13.8% used appropriate interphrasal articulation processes, used appropriate reference chains and ensured connections between enunciation coordinates" (p. 51). Some of these "inaccuracies (...) affected the intelligibility of the texts" (p. 52).

In what concerns teacher education, since 2014 pre-service teachers are required to take a written and an oral test in Portuguese Language in order to access the professional master's degrees that qualify for teaching. Concerning in-service teacher education, the Portuguese Scientific and Pedagogical Council for Continuing Education offers around 200 training courses in the area of writing.

4. Catalonia

Education in Catalonia is based on a new curriculum (2022) which promotes 'Competències clau i perfil competencial de sortida de l'alumnat al final de l'educació bàsica' [Key competences and successful competence profile of all students in the final stage of basic education]. More specifically, the teaching and learning of writing can be found in competence 5 of the Catalan curriculum, which states that at the end of basic education, all students should be able to produce written and multimodal texts, that are adequate, coherent and cohesive. Learners should be able to apply basic strategies for the planning, writing, revision, correction and editing of written and multimodal texts, both in cooperation with peers and alone. Learners should be aware of and capable of attending to specific conventions relative to different discursive genres and to write texts that create and communicate knowledge and respond in an informed, effective and creative way to specific communication needs. The curriculum is divided into different goals at different stages in basic education.

While the curriculum 2022 does not explicitly impose specific approaches to the teaching of writing, there are key terms throughout the curriculum that are indicative of the methods supported by the Catalan government: competences, situated learning, project-based learning, collaborative learning (this includes collaborative text-writing, in particular at early stages) and transversal competences. This last term is especially important for the teaching of writing as it is expected that learners are exposed to and engaging with different discursive genres in different areas (e.g. scientific report writing, essay writing in multiple languages, digital writing, creative texts such as campaigns, posters, etc.). As the curriculum states, learners should "saber escriure al segle XXI vol dir fer-ho en diferents suports i formats" (p. 54) [know how to write in the 21st century means doing it in different ways, platforms and formats.]

In regards to teaching and learning of writing, other aspects that come into play in the curriculum are the key role that the school library plays for literacy (reading and writing) and the introduction of learning about gender, interculturality, global citizenship and the prevention of violence. Again, there is little discussion of the pedagogical approach to dealing with these issues, however they are listed as key transversal aspects of the teaching of reading and writing.

The previous curriculum had already moved towards hands-on, project-based learning and this has become a frequently more common approach in primary education across Catalonia as the government has provided resources and training for its implementation. Adaptation of this can be seen

in ‘writing workshops’, ‘writing corners’, peer-evaluated collaborative writing and plurilingual, interdisciplinary projects with specific text and oral output before, during (sub-tasks) and as final output. Research on the teaching of writing in compulsory and post-compulsory schooling has undergone extensive development in Catalonia and Spain over the last decade, in line with international research, as shown by the publications of special issues, contributions of research groups and the preeminent attention on this topic in international conferences. However, relevant voices have highlighted the lack of transfer of the results to all teachers and therefore a low impact on classroom practice. When students arrive at the university, they have low writing skills, which probably show that students spend little time writing in schools. This suggests that teachers are not aware of the need to adequately address the complex teaching-learning process that writing requires. Teacher training seems to be, then, a strategic area for improving school children writing competence and something that at this stage clearly requires adequate responses.

Ministerio de Educación y Formación Profesional . (2022) Escritura creativa en el aula: una propuesta didáctica para Educación Primaria.

Part II Background

In this part we discuss concepts that are central to the theoretical underpinnings of the AILIT project, such as *scaffolding*, *motivation/engagement* and *writing*.

1. What is scaffolding?

The metaphor “scaffolding” has become popular in educational theory. Wood et al. (1976) introduced the metaphor in the context of the prototypical instructional situation where “an adult or ‘expert’ helps someone who is less adult or less expert (p. 89)”. They described the scaffolding process as consisting essentially of “the adult ‘controlling’ those elements of the task that are initially beyond the learner’s capacity, thus permitting him to concentrate upon and complete only those elements that are within his range of competence (p. 90)”. Operating in the area between what is beyond and what is within the learner’s capacity, the concept of scaffolding is closely related to the Vygotskyian concept of the “zone of proximal development”, defined as “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more competent peers (Vygotsky, 1978, p. 86)”.

The scaffolding, then, is what the adult or the more competent peer does to support the learner in the zone where independent problem solving is not possible. It follows that such scaffolds are temporary, or evolving as the learner progresses.

Wood et al. conclude their study by listing a set of “scaffolding functions” that the teacher operates when supporting the learner:

1. Recruitment (enlisting the learner’s interest in the task)
2. Reduction in degrees of freedom (simplifying the task by controlling some of its elements)
3. Direction maintenance (keep the learner motivated and progressing)
4. Marking critical features
5. Frustration control
6. Demonstration

Although this list is not exhaustive, tied as it is to Wood et al.'s study of one concrete task, it highlights the often-overlooked fact that maintaining motivation for and interest in the task is an essential part of scaffolding. In addition to functions directly targeting the learner's competence (such as reducing their freedom in the task), several of the functions actually target the learner's motivation.

In the AILIT project, we have a **broad understanding** of the scaffolding of student's writing as **all steps taken by the teacher to support the learner's writing at a level slightly above his current competency level, whether they target the learner's competency itself or the learner's motivation**. Of particular importance in the project is the concept of **digital scaffolding**, which we take to be **all steps taken by a computer program to support the learner's writing at a level slightly above his current competency level whether they target the learner's competency itself or the learner's motivation**.

2. Motivation and engagement

Lack of motivation for engaging in activities that improve literacy is an important obstacle to literacy acquisition. The AILIT project will address these concerns by matching students' texts to student readers in other countries, applying state of the art AI technology to establish authentic reader and writer situations. In the AILIT project, where we aim to build an environment for students to freely write and read texts as part of their literacy education in elementary schools one of the challenges is how to get and keep children engaged in reading and writing.

The positive association between motivation for writing and writing skill is firmly established, for example through recent systematic reviews of research on the subject (Camacho et al., 2021; Alves-Wold et al., in review). A central objective of the AILIT project is to explore ways of increasing students' motivation for literacy activities through the use of the digital platform.

Motivation can be considered the reason for which humans initiate, continue, or terminate a behavior at a given time. There seems to be no agreed upon definition of motivation, partly due to the fact that it can be conceived as a trait, something that is stable over a long time or as a state, which may change due to circumstances (Wasserman & Wasserman, 2020). A quick scan through research literature shows different perspectives on motivation that provide building blocks for the design of the AILIT-network.

2.1 Situational and personal interest

Interest is an important part of motivation. It refers to the psychological state of engaging or the predisposition to reengage with particular objects, events, or ideas over time. Following the line of thought of Hidi and Renninger, interest can be distinguished from other parts of motivation in three ways. First, interest includes both affective and cognitive components. Typically, the affective component of interest describes positive emotions accompanying engagement, whereas the cognitive component refers to perceptual and representational activities related to engagement. Next, interest is the outcome of an interaction between a person and a particular content. Hidi and Renninger (2006) posit that interest is always content specific and not a predisposition that applies across all activities. They describe the key role of individual interest for development of literacy competence. The road towards individual interest starts with triggering situational interest and progresses through increasingly advanced phases of interest. According to Hidi and Renninger,

situational interest refers to focused attention and the affective reaction that is triggered in the moment by environmental stimuli, which may or may not last over time, whereas individual interest refers to a person's relatively enduring predisposition to reengage particular content over time as well as to the immediate psychological state when this predisposition has been activated.

2.2 Motivation as self-determination

Another influential perspective comes from **the self-determination theory**. This theory is rooted in assumptions about intrinsic motivation, asserting that "people are innately curious, interested creatures who possess a natural love of learning and who desire to internalize the knowledge, customs, and values that surround them" (Niemiec & Ryan, 2009, p. 133).

According to Deci & Ryan (2012), **three foundational human needs** must be satisfied in learning situations in order for a student to develop intrinsic motivation within a domain, i.e. feeling of competence, autonomy and relatedness. When these needs are thwarted, people become disaffected, that is, they withdraw, escape, or act out.

School contexts influence engagement by supporting (or undermining) students' experiences of themselves as related in school, as competent to succeed, and as autonomous or self-determined learners. From these experiences, children cumulatively construct views of themselves, referred to as self-system processes. These beliefs are durable convictions that shape apparent reality and so guide action.

Relatedness refers to the need to experience oneself as connected to other people, as belonging; it is hypothesized to underlie processes of attachment and has been studied across the lifespan as the "need to belong". Applied to learning situations this means that a sense of belonging in school will contribute to engagement in learning activities.

Competence refers to the need to experience oneself as effective in one's interactions with the social and physical environments and is hypothesized to underlie processes of control. Perceptions of self-efficacy, ability, academic competence, and control are expected to predict student engagement and eventual learning, academic performance, and achievement. When one thinks of oneself as able to take on the task ahead (e.g. writing or revising a text) a feeling of competence is present. Consequently, the level of difficulty of a task should be within the students' zone of proximal development (Vygotsky, 1978). Meaning that the task ahead should be challenging but manageable. A too easy text or task will not result in feelings of competence.

Autonomy refers to the need to express one's authentic self and to experience that self as the source of action, and is said to underlie processes of self-determination. The idea is that students with a greater sense of autonomy in school also show higher levels of classroom engagement, enjoyment, persistence, achievement, and learning. The need for autonomy means that students need to feel they have influence in the learning situation. This influence is often operationalized by giving the students choices in the learning's situation.

2.3 Engagement as outward manifestation of motivation

Engagement can be considered as the outward manifestation of motivation (Skinner, Kindermann, Connell, & Wellborn, 2009a). Basically motivation is concerned with the psychological processes that underlie energy, purpose, and durability of human action (Deci, 1992a). Engagement's characteristic effort, exertion, vigor, intensity, vitality, zest, and enthusiasm are markers of energy. Interest, focus, and concentration are outward expressions of purpose or direction, and absorption, determination, and persistence are signs of durability. Motivation refers to the underlying sources of energy, purpose, and durability, whereas engagement refers to their visible manifestation. Alexander (2018) stresses that those who are engaged readers and writers are held to have significant academic,

motivational, emotional and social advantages over those who are not willing participants in their own literacy development.

More specifically, **four dimensions of student engagement** are often mentioned: affective, behavioral, cognitive, and social engagement. **Emotional engagement** is viewed as positive affective reactions toward teachers, classmates, and school and is conceptualized as facilitating students' sense of connection with school and commitment to their schoolwork. It is also referred to as **affective engagement** to connote more strongly the physical display of emotion. It refers to students' affective reactions in the classroom, including interest, boredom, happiness, sadness, and anxiety. **Behavioral engagement** in instruction is viewed as active participation in academic activities as demonstrated through attention, persistence, concentration, and asking and answering questions. **Cognitive engagement** encompasses mental investment in learning, effortful strategy use, and deep thinking. In the annex 1 possible indicators of engagement and disengagement are mentioned without the pretention to be complete.

More recently **social engagement** was added as a fourth dimension of involvement in classroom learning. Within the context of reading and writing this involves the exchange of interpretations of text and other ideas with peers in a "community of literacy" as important social behaviors of students who are engaged in reading. Using the principles of cooperative learning (Johnson & Johnson, 2009) several indicators of social engagement and disengagement can be derived. In Annex 2 a preliminary list of social engagement versus disengagement behavioral indicators is given, again without any claim of completeness.

2.4 Scaffolding engagement in writing

Active participation, engagement, and effort are promoted by tasks that are hands-on, heads-on, project-based, relevant, progressive, and integrated across subject matter, inherently interesting, and fun (Deci, 1992b, 1998; Renninger, 2000). Authentic work is a term used to characterize "tasks that are considered meaningful, valuable, significant, and worthy of one's effort, in contrast to those considered nonsensical, useless, contrived, trivial, and therefore unworthy of effort" (Newmann et al., 1992, p. 23). By connecting to the "real world" beyond school, such tasks offer students a sense of purpose and ownership (Newmann et al., 2007).

Studies conducted in elementary classrooms report that complex tasks facilitate engagement as well as academic achievement. Those studies include interventions, such as efforts by Miller and Meece (1997, 1999) to increase the number of complex or high-challenge literacy tasks offered in eight Grade 3 classrooms. The researchers defined the high-challenge tasks as those involving extended reading or writing, lasting for more than a day, and benefiting from peer collaboration. They posited that simple, or low-challenge tasks, involve little reading or writing, last one day, and require solitary work. On the basis of student reports of their interest and attitude toward class activities and their performance on reading tests, Miller and Meece concluded that the intervention increased student engagement and achievement, with the greatest apparent effects on low achievers in classes with the most opportunity to complete complex tasks.

- *Write for real-world reasons.* Engaging students are fostered when a desire to make an impact on the lives of others is encouraged. When they recognize the potential power behind their words and see the relevance of their writing, they are inspired to change the world. In the absence of a clear purpose, students' writing simply becomes an exercise in compliance rather than a vehicle for change.

- *Allow choice.* Engaged students are involved in learning for their own purposes. The best way to promote this ownership and inquisitiveness is by involving students in making choices about what they will learn and how they will communicate their learning with others.
- *Focus on the process versus the product.* When promoting authenticity in students' writing, it is important to place a greater emphasis on the development of students' ideas relative to the writing versus a focus on layout, grammar, organization and style. A process approach promotes students' ideas through brainstorming, class discussions, and revision. The work is collaborative and students are engaged in a recursive process where their writing is developed through multiple drafts and iterations.
- *Share students' writing beyond the classroom.* When students know they are writing for an audience besides their teacher and classmates, the stakes are raised and students are driven to produce their best. Once students know their intended audiences, time should be spent thinking about the different ways to appeal to their audiences.
- *Use opportunities to have students connect and communicate with others* Students become better writers by writing frequently and willingly. In order for this to happen, we need to find ways to motivate students to write at home and in school not just to fulfil an assignment, but because they crave the opportunity to connect and communicate with others.

So, a way to increase the frequency of students' writing is to work with them to design tasks that make them want to share their message and persevere to get it right. Once students are clear about what they want to work on, they can be supported to develop their writing skill.

When students are concerned with things like required length of a piece, requirements for mechanics, the number of sources required, and whether or not they need to write in complete sentences, we know they are not engaged in authentic writing. Rather than the teacher holding all of the answers, authentic tasks provide students with the chance to write for "experts" and those most personally invested in what they have to say. Students can make their own decisions about their writing and become an authority on their topic.

2.5 Design questions for the AILIT environment related to engagement

The writing network AILIT and the context in which it will be implemented, aims at improving the engagement of 8-11 years old elementary students in (free) writing. Using an overall model of engagement, we assume that certain design features of the AILIT-network need to be taken into account in order to support this general aim. The overall mechanism looks like this. In order to be supportive the AILIT environment features need to be considered to the extent that they foster student engagement.

We contend that the AILIT environment includes

- authentic writing tasks that are inherently interesting for students, possibly starting with triggering situational interest and moving gradually towards individual interest.
- forms of collaboration between student inside schools and possibly across schools between students of the three participating countries;
- Forms of peer feedback, again inside schools and possibly across schools between students of the three participating countries;
- Online scaffolds (support) in carrying out reading and writing activities;
- Teacher scaffolds in carrying out reading and writing activities;

Related to engagement using the literature the design questions to be answered are:

- Which task features, especially relating to authentic task design do positively affect engagement?
- Which facilities for collaboration and peer feedback on local and international level contribute positively to student engagement in reading /writing?
- Which scaffolds, albeit in-built online or teacher delivered do positively affect engagement?

Research literature and good practice report a variety of practices that have proven to foster students' literacy engagement. The basic idea is that these practices will have an impact on student motivation and will be directly visible in (different types of) student engagement in reading and writing activities. Finally the active engagement will result in enhanced reading and writing performance and competence in the long run. In Figure 1 we mention: *features of a supportive reading environment* including authentic writing tasks, collaboration facilities, peer feedback facilities, online scaffolds, and teacher scaffolds. This in turn will trigger *student motivation* for reading and writing, and thereby affecting motivational processes mentioned development of personal interest, reaching higher levels of self-determination, and fulfillment of basic needs. This shows in different related *types of engagement* (behavioral, emotional, cognitive and social engagement). Following this, actual *reading and writing performance* shows in products with different topics and different levels of quality.

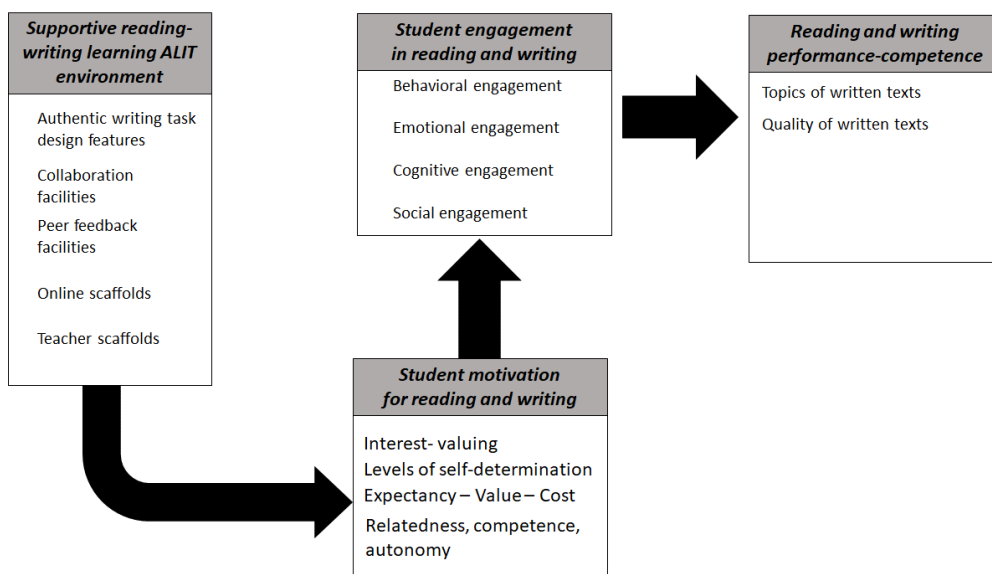


Figure 1: Assumed reading-writing engagement mechanisms when using the ALLIT-network aimed at improving writing performance

Part of the online scaffolds unfold when students work within the ALLIT- environment. One way of doing this could be to use recommender systems to give students texts with characteristics that they are presumably interested in. Students who are interested in what they read tend to read more often and persist longer when the texts they read get boring or difficult. Consequently, increased time on task and stamina put forth, is a reason why students who report being interested in reading often gain a higher score on reading tests than students who report being less interested in what they read.

The AILIT project will explore how recommender systems can be used when texts written by a student in one country is sent to a student in another, to match their interest as much as possible. The project will also try to address all basic student needs when designing the gameplay of the platform. For example, the idea of participating in an international network of student writers is potentially a powerful driver of sense of belonging, and we will seek to exploit this idea maximally in the design.

- Alexander, P.A. (2018). Engagement and literacy: reading between the lines *Journal of Research in Reading*, 41(4), 2018, pp 732–739. DOI:10.1111/1467-9817.12262
- Alves-Wold, A., (in review). The ABCs of writing motivation: A systematic review of factors emerging from K-5 students' self-reports as influencing their motivation to write.
- Camacho, A., Alves, R. A., & Boscolo, P. (2021). Writing motivation in school: a systematic review of empirical research in the early twenty-first century. *Educational Psychology Review*, 33(1), 213-247.
- Deci, E. L. (1992). The relation of interest to the motivation of behavior: A self-determination theory perspective. In K. A. Renninger, S. Hidi, & A. Krapp (Eds.), *The role of interest in learning and development* (pp. 43–70). Lawrence Erlbaum Associates, Inc.
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74, 59–109.
- Guthrie, J. T., Wigfield, A., & You, W. (2012). Instructional contexts for engagement and achievement in reading. In *Handbook of research on student engagement* (pp. 601–634). Boston, MA: Springer.
- Hidi, S., & Renninger, K. A. (2006). The Four-Phase Model of Interest Development. *Educational Psychologist*, 41(2), 111–127. https://doi.org/10.1207/s15326985ep4102_4
- Johnson, D. W., & Johnson, R. T. (2009). An Educational Psychology Success Story: Social Interdependence Theory and Cooperative Learning. *Educational Researcher*, 38, 365-379. <https://doi.org/10.3102/0013189X09339057>
- Johnson, D.W., & Johnson, R.W. (2009). An Educational Psychology Success Story: Social Interdependence Theory and Cooperative Learning. *Educational Researcher*, 38; 365-379.
- Lee, Y., Jan, B.G., & Smith, K.C. (2021). A Systematic Review of Reading Engagement Research: What Do We Mean, What Do We Know, and Where Do We Need to Go? *Reading Psychology*, 42:5, 540–576. Doi:10.1080/02702711.2021.1888359
- Lonsdale, C., Hodge, K. & Rose, E. (2009). Athlete burnout in elite sport: A self-determination perspective. *Journal of Sports Sciences*, 27(8): 785-795.
- Miller, S. D., & Meece, J. L. (1997). Enhancing elementary students' motivation to read and write: A classroom intervention study. *The Journal of Educational Research*, 90, 286–299.
- Miller, S. D., & Meece, J. L. (1999). Third graders' motivational preferences for reading and writing tasks. *Elementary School Journal*, 100, 19–35.
- Newmann, F.M., King, M.B., & Carmichael, D.L. (2007). Authentic Instruction and Assessment Common Standards for Rigor and Relevance in Teaching Academic Subjects. Prepared for the Iowa Department of Education. IOWA: Des Moines. Retrieve at: <http://psdsdpd.pbworks.com/w/file/attach/67042713/Authentic-Instruction-Assessment-BlueBook.pdf>
- Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, Competence, and Relatedness in the Classroom Applying Self-Determination Theory to Educational Practice. *Theory and Research in Education*, 7, 133-144. <https://doi.org/10.1177/1477878509104318>
- Renninger, K. A. (2000). Individual interest and its implications for understanding intrinsic motivation. In C. Sansone & J. M. Harackiewicz (Eds.), *Intrinsic and extrinsic motivation: The search for optimal motivation and performance* (pp. 373–404). Academic Press. <https://doi.org/10.1016/B978-012619070-0/50035-0>
- Skinner, E. A., Kinderman, T. A., & Furrer, C. J. (2009). A motivational perspective on engagement and disaffection: Conceptualization and assessment of children's behavioral and emotional participation in academic activities in the classroom. *Educational and Psychological Measurement*, 69, 493–525.
- Wasserman, T., Wasserman, L. (2020). Motivation: State, Trait, or Both. In Th. Wasserman & L. Wasserman: Motivation, Effort, and the Neural Network Model. Neural Network Model: Applications and Implications. Springer, Cham. https://doi.org/10.1007/978-3-030-58724-6_8
- Wigfield, A., Guthrie, J.T., Perencevich, K.C., Taboada, A., Lutz Klauda, S., Mcrae, A., & Barbosa, P. (2008). Role Of Reading Engagement In Mediating Effects Of Reading Comprehension Instruction On Reading Outcomes. *Psychology in the Schools*, 45(5), 432-445.

3. The process of writing

The AILIT project is mainly about scaffolding writing. To help build digital scaffolds, we need a model of the process of writing. What is actually happening in the writing process? What is it that could be scaffolded?

Writing researchers over the past decades have acknowledged that writing is both a cognitive process going on within the individual writer and a social phenomenon happening between people in given contexts.

There are many models of writing, and the different models are convenient for different ends. For the purpose stated in AILIT, we chose for to apply Graham's "Writer(s)-Within Community" model of

writing (e.g., 2018), which models both the writer as an individual and the community within which writing happens.

Writer(s) within community: the writer

In Graham’s model, “**Writer**” stands for the individual (whether they be the writer, reader or having other roles), the cognitive resources they draw upon and the mental processes they engage in.

The **long-term memory** contains resources in the form of *knowledge* and *beliefs*. Knowledge that can be drawn upon in writing include knowledge about language and about reading and writing, but also background knowledge about the topic to be written about. The writer’s beliefs about writing (for instance about the value of writing, about their own competence, and about the purpose of writing) will also influence their writing – for better or worse.

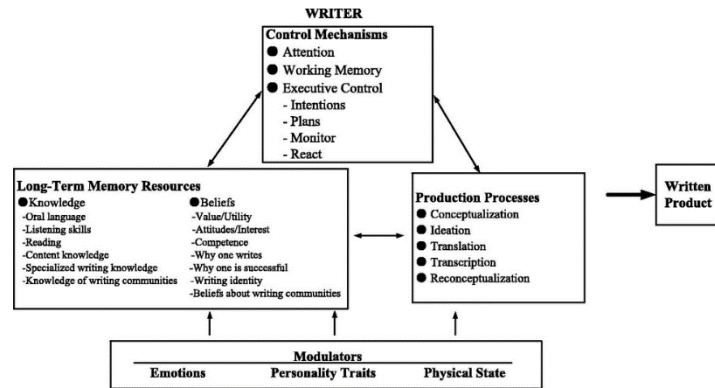


Figure 1: Cognitive mechanisms involved in writing (Graham, 2018)

When writing, the writer leverages different **control mechanisms** to control the writing process. One mechanism is focused on regulating *attention*, for example shifting it between different parts of the task or avoiding distractions. Another is the *working memory*, the temporary storage system where information is being treated as writing occurs. Finally, *executive control* mechanisms include planning and monitoring during writing.

Graham terms **production processes** the operations that the writer performs to produce text. *Conceptualization* entails constructing an internal representation of the task at hand. *Ideation* means gathering ideas for content from long-term memory or from other sources (e.g. books, collaborators...). The writer then *translates* these ideas into language, and *transcribes* the language into written text. Finally, *reconceptualization* means rethinking, re-arranging and modifying the text.

All of these resources and processes are susceptible to be moderated by what Graham calls **modulators**: *emotions* (e.g. joy, anger...), *personality traits* (e.g. openness, neuroticism) and *physiological states* (e.g. energy, hunger...).

Writer(s) within community: the community

In addition to these cognitive phenomena, the writing process is decisively influenced by the different contexts it is inscribed into – by Graham summarized under the term **“Community”**. Individuals belong to many different writing communities. Writing communities are, says Graham, varied, but share some common characteristics, by whose interplay they are determined:

- Writing communities are united by one or several *purposes* for writing (e.g. communication, persuasion, creating imaginary worlds...), and these purposes are variable over time
- Writing communities include *members* that produce text (writers) and that process text (readers), but sometimes also other categories, such as teachers. Membership can be wide or narrow, roles can be static or shifting and the structure can be more or less hierarchical
- *Tools* are anything the community employs to accomplish their purpose: paper and pencil, word processors, speech-to-text synthesizers etc.
- *Actions* are typical practices employed by the community to achieve their purpose, both to do the writing itself, to structure the writing environment or to manage different social aspects of writing.
- Writing communities produce and use *written products*: texts of different statuses (e.g. draft or finished), pictures, notes. These may be digital or on paper, published or secret, temporary or fixed.
- Writing communities are also situated in *physical and social environments* that shape them in many ways. Physical environments may be physical (e.g. classrooms, offices, homes) or digital. Social environments concern the relationship between members, and may for example be supportive or hostile, cooperative or competitive.
- Writing communities are also heavily influenced by their *collective history*. For example, purposes may shift as the community develops together and tools or actions that have proven successful may become more and more privileged.
- Finally, *social, cultural, political, institutional, and historical forces* operating outside the community may also shape the community. Individuals are members of different communities, and bring with them elements between them. Political and historical forces also shape writing communities, as exemplified by developments in writing technology from the invention of the alphabet to that of the printing press and modern digital word processors.

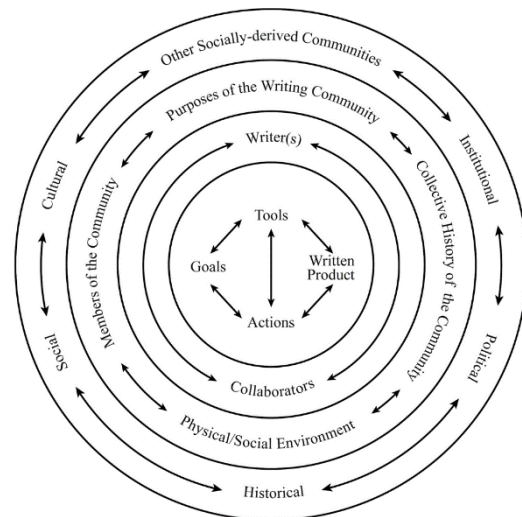


Figure 2: Basic components of a writing community (Graham, 2018)

Together, the “writer” and the “community” exhaust what is going on in the writing process. Writing is “simultaneously shaped”, says Graham, “by the community in which it takes place and the cognitive capabilities and resources of community members who create it (p. 271)”.

In the AILIT project, we will address both writer and community. The community can be seen as consisting of the network of writers and readers that participate in the platform, and is thus inherent

in the project. When designing the platform and the scaffolding material, we will constantly attend to the different resources that the writer draws upon.

Graham, S. (2018). A revised writer (s)-within-community model of writing. *Educational Psychologist*, 53(4), 258-279.

4. Conditions where writing thrives

As the AILIT project aims to scaffold writing, an overview of what we know about good conditions for writing seems very useful.

Writing experiences in school should provide students with the opportunity to develop an understanding of the many purposes of writing (e.g. inform, persuade, narrate, explain, amuse, entertain, learn) as well as an understanding of writing genres (e.g. report, recount, fiction forms, poetry, persuasive forms, blog, email, text) and audience awareness (NCTE, 2016; Graham et al., 2012).

We can find evidence for good practice in writing from a number of sources. These include meta-analyses (e.g. Graham et al. 2012) or systematic reviews of the literature (e.g. Koster et al., 2015), studies of effective teachers of writing (e.g. Gadd & Parr, 2017), national surveys of teachers' practices in writing (e.g. Gilbert & Graham, 2010 in the US; Dockrell, Marshall & Wyse, 2016 in the UK), recently-published articles in peer-reviewed journals (e.g. Kennedy & Shiel, 2022), and evidence from researchers who spend long periods of time in classrooms carefully documenting their observations and interactions (e.g. Graves, 1981, 1994). This body of research provides insights into the key principles for success in developing children's writing in a range of genres.

Provision of sufficient **time** to write on a daily basis is a key condition for effective writing development (Graham et al., 2012). They highlight that without daily time to write students are unlikely to develop writing to the level required for success in school and in later life. An hour a day is recommended from first grade up (Graham, 2019). This time should be divided between explicit instruction (e.g. related to strategies, genre conventions, language register) and time for children to compose on self-chosen topics. **Choice** in writing is linked to time and Graves (1994, p.104) argues that when both are provided to children they enter into 'a constant state of composition'. This contributes to writer motivation and engagement and facilitates a 'flow experience' (Csikszentmihalyi 1978, in Wigfield & Guthrie, 1997, p. 3) - a loss of awareness of time passing as writers become absorbed in writing.

A third condition is the provision of explicit instruction in the form of **mini-lessons** which build incrementally on each other. Mini-lessons scaffold children's development in the processes (e.g. how to choose topics, how to draft, revise, proofread and publish), skills (e.g. conventions of writing such as grammar, spelling, punctuation, print concepts) and craft of writing (text structures, word choice, sentence structures, language register, audience awareness). Craft mini-lessons focus on the literary, aesthetic, and creative dimensions of writing and foster a 'word consciousness' (Graves & Watts-Taaffe, 2002) amongst children. It is important that mini-lessons are indeed mini, so that there is sufficient time within the workshop for children to write independently. Overt modelling of strategies using the **gradual release of responsibility model** (GRRM, Pearson & Gallagher, 1983; Fielding & Pearson, 1994) enables the teacher to provide instruction within the child's '*zone of proximal development*' (Vygotsky, 1978, p. 87). Using the five steps of the GRRM (Explain, demonstrate, guided practice, independent work, reflection and goal setting) enhances **metacognitive** dimensions of learning. It brings the strategy to a more conscious level so that the learner may better internalise it and call upon it when working independently. Mini-lessons are most effective when they are informed by assessment data, matched to children's stage of development and draw on **high-quality 'mentor texts'** (Fletcher & Portalupi, 1998) to highlight particular aspects of writing. Mentor texts can serve as

models for developing writers. They make visible ways in which published authors have crafted words, phrases and sentences to create a particular mood, setting or complex character. Children can be supported to speculate on why the authors might have chosen particular words, sentence or text structures and can be encouraged to borrow such techniques when writing their own texts. Co-constructing **anchor charts** with children captures key dimensions of mini-lessons and when displayed in the classroom serve as visual reminders to children to incorporate such techniques into their own writing.

Social interaction and **oral language** development can be fostered in many ways as children can be scaffolded to discuss their writing topics, collaborate in the writing of texts, work together to revise and edit a piece of work, and share their writing product with each other through the use of the Author's chair (Graves, 1981; Kennedy & Shiel, 2019). As Guthrie and Anderson (1999, p. 36) suggest, 'when students can talk to each other about their writing, they learn an acute sense of audience and authorship'. Students can be encouraged to listen for details, ask questions and state what they like about their peer's written text and such observations can grow in sophistication over time as children internalise the mini-lessons and develop an academic language register suitable to the genre. When the right tone and climate of respect for each writer is established, share sessions have the potential to create an environment conducive to forming an engaged community of writers within classrooms.

A further key condition is the use of a range of formative and summative assessment tools by teachers and pupils. Teachers can gather a range of formative assessment data daily which can be utilised to inform planning and to differentiate teaching based on children's needs. Such formative assessment tools include conferencing with children (Graves, 1994), rubrics linked to mini-lessons (Kennedy & Shiel, 2022; Culham, 2018) and portfolios of children's writing samples (Graves, 1994) representing a range of genres. Conferences can be with individuals and/or small groups of children as they are composing. The hallmark of a good conference is 80% child talk and 20% teacher talk (Graves, 1994). Child-friendly rubrics and checklists can be developed and children can be scaffolded to engage in peer feedback and assessment.

A recent systematic review (Alves-Wold et al., in review) has examined what K-5 students themselves report as influencing their motivation to write. The study identified many of the factors listed above, and some others, and proposed a practical checklist called "The ABC of motivation":

- Appeal: how appealing is the writing task?
- Beliefs: what are the student's self-beliefs, beliefs about writing and beliefs about why they succeed or fail?
- Choice: to what extent can the student choose what, how, where and to whom to write?
- Difficulty: does the task present the right amount of challenge?
- Environment: How is the physical, social and psychological environment in which the writing happens?
- Feedback: Does the student get constructive and concrete feedback on their writing?
- Goals: What kind of goals does the student set for their writing?
- Help: What kind of support does the student get from teachers or peers, or from strategies and tools?
- Instructor: What role does the teacher take with regard to the student's writing?

This checklist can be used as an analytical tool and a vade-mecum for the ALLIT project when evaluating different ideas for content or design of the platform.

Part III Scaffolding practices

In this part, we present some examples of “analog” scaffolding practices that are in use in the project countries. The idea behind this is to get an overview of existing practices as inspiration for imagining what could be good digital scaffolds.

1. Model texts

With its roots back to Greco-Latin Antiquity (when students were asked to imitate passages from Homer or Virgil) and branches stretching into modern Artificial intelligence (where algorithms trained on a few model texts can produce quantity of new texts in the same genre), model texts could well be the prototype of a writing scaffold. The rationale for model texts closely aligns with the definition of scaffolds as described by Wood et al. (1976). It limits the efforts necessary by the student by letting him keep some elements from the model and at the same time gives room for creativity by letting him choose what not to keep. Working with model texts allows students to get acquainted with norms and requirements of different genres.

Endless numbers of ways of working with model texts have been described. As an example, the Norwegian Writing Centre (Kringstad & Lorentzen, 2014) proposed a four-step model for working with argumentative texts, adapted from Callaghan & Rothery (1988):

- Building knowledge: Teacher and students discuss the topic that the students are to write about, discussing for example different concepts or arguments related to it.
- Deconstructing the model text: the teacher and students together analyze a model text passage (structure, purpose, addressee, linguistic choices made...)
- Collaborative writing: the teacher and students together write a new text on the basis of the model, the teacher drawing attention to elements in the model that could be useful
- Individual writing: students write their own text

A full cycle as described by Callaghan & Rothery places very high demands on teacher support and flexible management of discussions, and as such seems unsuitable for a digital scaffold. Simpler versions can however be envisaged where students read short texts and are asked to imitate them – possibly with a video suggesting how model texts can be used?

Håland, A. (2016). Skrivendidaktikk. Korleis støtta elevene si skrivning i fag?

Kringstad, T., & Lorentzen, V. (2014). *Et ressurshefte om argumenterende skrivning*. Trondheim: Skrivesenteret.

Callaghan, M., & Rothery, J. (1988). Teaching factual writing: a genre-based approach: the report of the DSP Literacy Project, Metropolitan East Region. Metropolitan East Disadvantaged Schools Program.

2. Text lliure

This is a pedagogical approach that first arrived to Catalonia in the 1930s and is loosely based on the French pedagogue, Freinet's work. The notion is that the young learner should be free to write what she wants, when she wants and about what she wants. There is never any obligation to write and it is at the learner's pace and timing. The teacher creates an environment that motivates the learner to write, through discussions, examples of other texts and creative activities that stimulate thought. The students write texts at school or at home. A second phase is to read, aloud (recorded, in class, to parents or other students), awakening the 'inner voice and critic' of language rhythms. A text is chosen by the students and transcribed onto paper, digital formats or chalkboards. This text is corrected and amended collaboratively. The teacher can help focus on specific aspects such as text cohesion, grammatical complexity or vocabulary expansion (e.g. use of a thesaurus). The corrected text is then copied by all the learners to help promote handwriting and spelling. The texts can be used to create a group collection of related texts (e.g. classroom book).

3. Picture-elicited story writing:

The rationale behind picture-elicited story writing is simply getting the writer on track for a writing a story by first presenting a picture as a starter. The picture contains some dramatic event that gives the student a scaffold for writing up a sequence of events while still having some independence. The approach has similarities with the approach "writing frames", while the latter most often includes more framing throughout the writing process; "*Writing frames are templates consisting of starters, connectives and sentence modifiers which offer children a structure for communicating what they want to say*" (Lewis & Wray, 1996).

Many examples of picture elicited stories can be given. The citation below is from a research project where the data collection took place in an authentic classroom setting, as part of the ordinary instruction in second grade:

"The students were introduced to a teddy bear who loves stories and who would be the audience for the students' texts. Students were then briefly introduced to the story genre. Examples of narratives were mentioned, and the students were given the following explanation: A narrative is a story about something happening, it can be something exciting, scary, sad or funny. They were then asked to write a story to a picture, answering the question: What has happened, and what will happen next? Two pictures were used as tasks: One picture showed a boy about to drop his ice cream, and the other picture showed a girl about to fall down from a tree. Students were given three important words corresponding to the pictures (is 'ice', gut 'boy', pus 'cat', and jente 'girl', tre 'tree', ball 'ball')" (Spilling et al., 2022, p. 135).

Picture-elicited story writing is a scaffold that gets most students to write some text. It is assumed that it gives main parts of the idea or plot of a text. While still giving some freedom to shape the text, it is largely shaped by the picture. In this way, it does not put as much effort on idea creation as a task without a picture prompt. Still, students will perform differently. Due to these features, the method is also often used as writing tasks in research.

This scaffold is easy to adopt to a digital interface, may be even more suitable than in an analogue interface.

Lewis, M., & Wray, D. (1996). Writing frames. *Reading, UK: Reading and Language Information*.

Spilling, E. F., Rønneberg, V., Rogne, W. M., Roeser, J., & Torrance, M. (2022). Handwriting versus keyboarding: Does writing modality affect quality of narratives written by beginning writers?. *Reading and Writing, 35*(1), 129-153.

4. Self-Regulated Strategy Development (SRSD)

Self-regulated strategy development (SRSD) is the term given to an approach to writing instruction that places a high premium on the explicit teaching of strategies to support children's independent, self-efficacious writing. SRSD is the product of significant research by Dr Karen Harris, Dr Steve Graham and colleagues at Arizona State University.

SRSD is purposely informed by a number of theoretical perspectives. As outlined by Harris and Graham (2018), these perspectives are wide-ranging and include theorists writing on cognition and behavior, the zone of proximal development (e.g. Vygotsky, 1962), research on metacognition and empirical work on strategy acquisition for students with learning disabilities as well as broader influences including perspectives like sociocultural theory. A key premise of SRSD is that clear, systematic and explicit instruction in writing strategies can enable *all* learners to communicate their thoughts and ideas coherently and creatively.

SRSD is characterized by the use of a range of strategies and mnemonics to support the teaching of different genres and the strategies associated with different aspects of the writing process. For example, POW+TREE supports *argument* writing (Harris & Graham, 2018):

- **P**ick my idea
- **O**rganise notes/thoughts
- **W**rite and say more
- **T**opic sentence
- **R**easons
- **E**xplain reasons
- **E**nding (wrap up)

Strategies such as this are taught using a teaching sequence like the following (Harris et al., 2013):

1. Developing appropriate knowledge for writing, including familiarisation with mentor/sample texts in the targeted genre
2. Discussion of students' current writing, including their self-efficacy beliefs and the new strategies they are going to learn
3. Modelling of the new strategy
4. Memorisation of the new strategy
5. Support/guided practice of students' application of the new strategy, which is gradually faded
6. Independent practice

There is significant research evidence to support the use of this practice, particularly for students with disabilities/literacy difficulties (e.g. Graham et al., 2013)

Graham, S., Harris, K. R., & McKeown, D. (2013). The writing of students with learning disabilities, meta-analysis of self-regulated strategy development writing intervention studies, and future directions. In H. L. Swanson, K. R. Harris, & S. Graham (Eds.), *Handbook of Learning Disabilities* (pp. 405–438). Guilford.

Harris, K. R., & Graham, S. (2018). Self-regulated strategy development: Theoretical bases, critical instructional elements, and future research. In R. Fidalgo, K. R. Harris, & M. Braaksma (Eds.), *Studies in writing series: Vol 34. Design principles for teaching effective writing*. Brill. <https://doi.org/10.1163/9789004270480>

Harris, K. R., Graham, S., Friedlander, B., & Laud, L. (2013). Bring powerful writing strategies into your classroom! *Reading Teacher*, 66(7), 538–542. <https://doi.org/10.1002/TRTR.1156>

5. Writing workshop

Graves' research (1983, 1994) had a profound effect on the teaching of writing internationally (Neumann & Shanahan, 1997). It 'paved the way for the widespread adoption of process-oriented writing instruction and, in particular, writing workshop in elementary classrooms' (Troia et al., 2009, p. 77).

Writing workshops apprentice children into the act of writing and support them in developing positive dispositions towards writing, motivation to write and opportunities to acquire a range of strategies and skills. Writing workshops typically occur daily and children experience writing in a wide range of genre over the course of the year. Writing workshops draw on a range of theories including cognitive, motivational, socio-cultural, genre and apprenticeship models (e.g. Hayes & Flower, 1980; Graham, 2018; Halliday, 1985; Vygotsky, 1978; Rogoff, 1990).

Writing workshops address several parts of writing:

- Processes of writing (e.g. how to choose topics, how to draft, revise, proofread and publish),
- Craft of writing (text/genre structures, word choice, sentence structures, language register, audience awareness).
- Skills (e.g. conventions of writing such as grammar, spelling, punctuation, print concepts)

Writing workshops typically include three phases to the lesson:

a) an opening mini-lesson (10-15 minutes) focused on a particular craft, process or skill of writing and may be linked to features of a particular genre;

b) daily time for students to write independently on self-selected topics within the genre study (20-30 minutes) during which time teachers conference with children and provide feedback as children are engaged in the act of writing;

c) a daily share session (8-10 minutes) in which children share their writing with peers and teacher. Such fundamental shifts in writing instruction provided the impetus for a rich and varied research agenda on the pedagogy of writing.

This scaffold seems very suitable as a digital scaffold.

Graham, S., Bollinger, A., Booth Olson, C., D'Aoust, C., MacArthur, C., McCutchen, D., & Olinghouse, N. (2012). *Teaching elementary school students to be effective writers: A practice guide* (NCEE 2012-4058). Washington, DC: National Center for Education Evaluation and Regional

Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://ies.ed.gov/ncee/wwc/publications_reviews.aspx#pubsearch

Graham, S. (2018). A revised writer(s)-within-community model of writing. *Educational Psychologist* 53(4): 1-22. DOI: 10.1080/00461520.2018.1481406

Halliday, M.A.K. (1985). An introduction to functional grammar. London: Edward Arnold.

Hayes, J. R., & Flower, L. S. (1980). Identifying the organisation of writing processes. In L. 52

Gregg & E. R. Steinberg (Eds.), *Cognitive processes in writing*(pp.3-30). Hillsdale, NJ: Erlbaum.

Kennedy, E. & Shiel, G. (2022). Writing assessment for communities of writers: Rubric validation to support formative assessment of writing in PreK to grade 2. *Assessment in Education: Principles, Policy & Practice*, 29 (2), 127-149, DOI: 10.1080/0969594X.2022.2047608

Kennedy, E. & Shiel, G. (2019). *Writing pedagogy in the senior primary classes: Knowledge, skills and processes for writing*. (Dublin: NCCA)

Rogoff, B. (1990). Apprenticeship in thinking: Cognitive development in social context. New York, NY, US: Oxford University Press.

Troia, G. A., Lin, S. C., Monroe, B. W., & Cohen, S. (2009). The effects of writing workshop instruction on the performance and motivation of good and poor writers. In G. A. Troia (Ed.), *Instruction and assessment for struggling writers: Evidence-based practices* (pp. 77-104). New York: Guilford Press.

6. Collaborative writing

Collaborative learning methods are based on such theories as Vygotsky's Sociocultural Theory (1978) which emphasizes that the teaching-learning process is fundamentally social as it takes place through interactions between 'experts' (those with knowledge or expertise) and/or 'novices' (those who require understanding and skills), contributing to "lead students into their Zone of Proximal Development" (Vygotsky, 1978, p.79). Krashen's Input Hypothesis (1985) also supports collaborative learning methods as to language learning since it is based on the idea that learning is achieved via comprehensible input obtained from other learners. Swain's Output Hypothesis (1995) also supports collaborative writing (CW) since it emphasizes that accurate output (comprising three main functions: noticing, hypothesis testing, and the reflective or metalinguistic function) is necessary for students to progress further towards target-like competence.

Collaborative writing tasks may enhance learning because they "encourage students to reflect on language form while still being oriented to meaning making" (Swain, 2000, p. 112). Hence, writing jointly enhances the development of metalinguistic competence as it leads students to discuss language, language use and to jointly find solutions to their language writing related problems. This collaborative dialogue is a form of *languaging* as "the process of making meaning and shaping knowledge and experience through language" (Swain, 2006, p. 89). Research has shown that by pooling their individual resources, pupils are able to scaffold each other and achieve a level of performance that is beyond their individual level of competence (Swain, 2000).

Hence, writing tasks in pairs or in groups (or involving the whole class) may help pupils scaffold each other's learning by sharing knowledge, and discussing language and text structure. Research has been showing that this contributes to making pupils produce more accurate and more complex texts (Storch, 2005), with greater grammatical or conceptual accuracy and complexity than those produced by individuals (Fernandez Dobao, 2013). Besides that, and according to Briskin et al. (2011) CW allows creating and developing a sort of "collective wisdom" (p. ii) that goes beyond the individual.

CW can be put into practice according to different modalities, from co-writing to cooperation in specific components and moments of text construction. Lowry et al. (2004) define CW as "an iterative and social process that involves a team focused on a common objective that negotiates, coordinates, and

communicates during the creation of a common document” (p. 72). Svenlin and Sørhaug (2022), in addition, say that CW MAY comprise six different stages as seen in Figure 1.

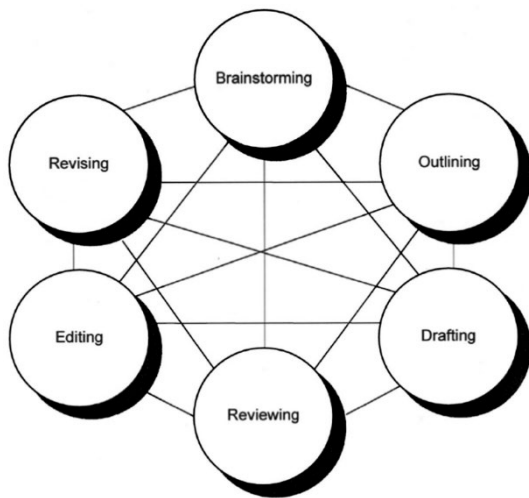


Figure 1 - *Stages of collaborative writing* (Svenlin & Sørhaug, 2022)

Sharples (1999) presents three different types of strategies that may be used in CW as presented in:

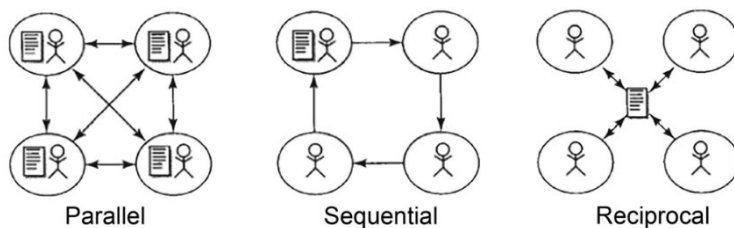


Figure 2 - *Sharples (1999) strategies of collaborative writing*

The *Programa Nacional do Ensino do Português* [PNEP; <http://www.dge.mec.pt/materiais-didaticos-elaborados-no-ambito-do-pnep>], funded by the Portuguese Government proposes some practical examples to address collaborative writing among peers (Barbeiro & Pereira, 2007) such as: Poem writing - reading a poem to the class; joint activities to interpret the poem (theme, main ideas, structure, linguistic choices made); collaborative writing of a poem (pair work/group work: planning, textualization and review); sharing the poem with the whole class; Story Writing involving different classes of the same school or from different schools - a class plans, textualizes and reviews the first part of the story; then it is sent by email to another class to continue it and this process may be repeated as many times as many classes are involved (between three and four). As stressed by the authors (Ferrão Tavares & Barbeiro, 2011), the intervention of different classes in the construction of the same text creates expectations in relation to the solutions found by the others, to the way in which they continued the narrative sequence or how they resolved some plot twists.

Research has been acknowledging the potentials of CW in the development of several competencies which go beyond writing and reading ones (already addressed in the section rationale): teamwork,

critical thinking, creativity, reflective competences (Herder, Berenst, Glopper & Koole; 2018; Sukirman, 2016; Rojas-Drummond, Albarrán & Littleton, 2008)

As to potential drawbacks, Carless (2002) underlines (possible) noise or absence of discipline, excessive L1 use (in FLE classes) and lack of student participation. Yarrow and Topping (2001) acknowledge unsatisfactory student interactions and refusal of students to work with others.

CW is suitable as a digital scaffold. The role of ICT in promoting (real-time) CW is increasingly underlined as computer technology has brought communication possibilities that can be used for the joint development of tasks between people separated by great distances.

Barbeiro, L.F., & Pereira, L. A. (2007). *O ensino da escrita: A dimensão textual*.
https://area.dge.mec.pt/gramatica/ensino_escrita_dimensao_textual.pdf

Briskin, A., Erickson, S., Ott, J. & Callanan, T. (2011). *The power of collective wisdom and the trap of collective folly*.
<https://books.google.pt/books?id=areaqlEDxUsC&printsec=frontcover&hl=pt-PT#v=onepage&q&f=false> (Acedido no dia 10 de novembro de 2022).

Carless, D. (2002). Implementing task-based learning with young learners. *ELT Journal*, 56(4), 389–396.

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

Ferrão-Tavares, C., & Barbeiro, L.F. (2011). *As implicações das TIC no ensino da língua*.
https://www.dge.mec.pt/sites/default/files/Basico/Documentos/implicacoes_tic_pnep.pdf

Herder, A., Berenst, J., Glopper, K. D., & Koole, T. (2018). Reflective practices in collaborative writing of Primary school students. *International Journal of Educational Research*, 90, 160–174.

Krashen, S. (1985). *The input hypothesis: Issues and implications*. Longman.

Lowry, P., Curtis, A., & Lowry, M. (2004). Building a taxonomy and nomenclature of collaborative writing to improve interdisciplinary research and practice. *Journal of Business Communication*, 41 (1), 66-99.
<https://journals.sagepub.com/doi/abs/10.1177/0021943603259363> (Acedido no dia 10 de novembro de 2022).

Rojas-Drummond, S. M., Albarrán, C. D., & Littleton, K. S. (2008). Collaboration, creativity and the co-construction of oral and written texts. *Thinking Skills and Creativity*, 3(3), 177–191.

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

Sukirman, S. (2016). Using collaborative writing in teaching writing. *Langkawi: Journal of The Association for Arabic and English*, 2(1), 33–46.

Svenlin, M., & Sørhaug, J. O. (2022). Collaborative writing in L1 school contexts: A scoping review. *Scandinavian Journal of Educational Research*. <https://doi.org/10.1080/00313831.2022.2115128> (Acedido no dia 11 de novembro de 2022).

Swain, M. (2006). Languaging, agency and collaboration in advanced language proficiency. In H. Byrnes (Ed.), *Advanced Language Learning: The Contribution of Halliday and Vygotsky* (pp. 95-108). Continuum.

Swain, M. (2000). Integrating language and content teaching through collaborative tasks. *The Canadian Modern Language Review*, 58(1), 44-63.

Vygotsky, L.S. (1978). *Mind in society. The development of higher psychological processes*. Harvard University Press.

Yarrow, F., & Topping, K. J. (2001). Collaborative writing: The effects of metacognitive prompting and structured peer interaction. *British Journal of Educational Psychology*, 71(2), 261-282.