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PROJECT-BASED LEARNING FOR 21ST-CENTURY SKILLS: THE FIVE C'S FOR L2 STUDENTS

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Abstract

This article proposes a project-based approach for teaching the five C's of the 21st-century skills – Critical thinking, Creativity, Collaboration, Communication, and Competencies in digital literacy, to promote deeper learning, higher-order thinking, and language development contextually and functionally for second language students. It calls for language socialization theory and practice within the systemic functional linguistics paradigm and elaborates the rationale. Those proposals are illustrated with five C's project ideas that benefit students and teachers. With those projects, students can develop their five C's competencies by asking vital questions, gathering, assessing, and interpreting information, posing and solving problems, drawing conclusions, and proposing alternatives with justification while developing the associated language. Teachers can utilize the project ideas provided in this article with necessary modifications to their contextual needs and possibilities in their teaching of the five C's and the associated language. They may also add components such as the assessment they needed to those project ideas. Depending on their needs and contextual possibilities, they may design, implement, and assess semester-long projects for competency development in all five C's. The arguments and

proposals included are applicable to all contexts. Researchers, teachers, and curriculum developers may utilize them for their needs with modifications as well.

Keywords

Project-Based Learning, Critical Thinking, Creativity, Collaboration, Communication, Digital Competencies, Second Language Students, Systemic Functional Linguistics

1. Introduction

In Beckett (2023) discussion of critical thinking (CT) for second language (L2) education, I positioned CT as one of the 21st-century skills. Creativity, collaboration, communication, and competencies in digital literacy are considered the other four C's of 21st-century skills. These five C's are the foci of current general education and workforce. I pointed out that while state and federal funding for boosting 21st-century STEM schools with project-based learning (PBL), including collaborative research, has a longer history in general education (see Beckett et.al., 2015; Beckett et. al., 2016), interest in 21st-century skills in L2 field is in its infancy. This is evidenced by general education adopting PBL as an effective educational approach for fostering 21st-century skills to promote deeper learning and higher-order thinking in STEM subjects.

The second language field recognizes the importance of 21st-century skills as well, evidenced by the professional standards issued by TESOL (2019), ACTFL (n.d), and The Cambridge Life Competencies Framework (2020) that include 21st-century skills – CT, creativity, collaboration, communication, and technology integration for digital liteacy. The standards and guidelines stipulate that second and foreign language curricula be student-centered focusing on both language and content and that teaching materials include digital resources and projects (TESOL International Association Standards for Teacher Candidates, 2019). In practice, however, 21st-century skills are seen as opportunities for practicing language skills, and treating digital literacy as something that needs to be taught as a separate discrete skill by itself within the form-focused linguistics paradigm (e.g., Opp-Beckman, 2019; Üstünlüoğlu, 2004).

In this article, I argue for a more responsible pedagogy that sees 21st-century skills beyond opportunities for practicing formal language skills (Sanavi & Tarighat, 2014). I call for teaching L2 students *21st-century skills* to develop transferable and generalizable skills and competency while also developing situational and contextual language form and function as well

as learning content subjects. I begin with definitions of and rationale for these skills, followed by potential project work suggestions for building *critical thinking, creativity, collaboration, communication, digital literacy, and content knowledge*. I will then discuss how second language development can occur through the projects with teaching and learning of 21st-century skills, project work and project content associated language form/function. These are essential for L2 learners who also need to learn how to learn, an additional essential task that often calls for new learning skills and strategy development, to take control of their learning reflectively and evaluatively, with effective use of resources and opportunities (The Cambridge Life Competencies Framework, 2020) in new educational and social cultures.

2. Five C's of the 21st-Century Skills: Definitions and Rationale

2.1. Critical Thinking (CT)

As we see in Beckett (2023), Critical Thinking (CT) is defined as an essential tool of inquiry and for deciphering arguments (Facione, 1990) between participants – with evidence, self correction (Saxton et al., 2012) and ‘reflective self-criticism’ (Ennis, 1985)” (p. 7). Paul and Elder (2006) see CT as “the art of analyzing and evaluating thinking with evidence. For Savery (2006), CT is a “transferable higher order thinking skills necessary for objectivity; logical, justified, and persuasive reasoning; recognition of and understanding for bias correction; and inductive theory development” (cited in Beckett, Under Review, p. 8).

CT is of vital importance in “education at all levels” (Saxton et al., 2012), workforce, and “responsible citizenry” (Dewey, 1916) as well as individual well-being due to the increasing need for filtering irrelevant/incorrect information. “CT skills are developed and improved through a metacognitive process of asking vital questions; gathering, assessing, interpreting information; and drawing ‘well-reasoned conclusions and solutions...’ (Beckett, Under Review, pp. 6-7). CT development takes time and requires deep learning with complex educational activities situationally and contextually in subject area contents focusing on moral and ethical issues (Facione, 1990) through project work.

For second language education, The Cambridge Life Competencies Framework (2020) defines CT as analyzing, understanding, evaluating ideas and arguments, solving problems, and making decisions. It also sees CT skills as having instrumental value for doing well on standardized tests (e.g., IELTS), developing increased linguistic awareness (e.g., noticing), and social awareness

(e.g., understanding and managing different points of view) in the safe space of a second language learning environment.

2.2. Creativity

Kampylis and Berki (2014) define Creativity “as the thinking that enables students to apply their imagination for generating ideas, questions and hypotheses, experiment with alternatives, evaluating their own and their peers’ ideas, with final products and processes” (p. 6). According to The Cambridge Life Competencies Framework (2020), learners learn to become creative by actively participating in creative activities, generating new ideas, and using them to solve problems. Citing Johnson-Laird (1988), Sternberg (2012) states that one must have “the knowledge with which to think creatively” (p. 4).

The SCSA defines Creativity as “the practice of thinking outside the box” (para 4), that is, thinking outside the convention. It is a skill necessary for understanding concepts innovatively from multiple perspectives to create and articulate new and unique solutions and proposals. Creative skills building requires creative techniques and ideas such as brainstorming for necessary ideas; analyzing, evaluating, and refining those ideas for maximum creativity; and implementing those ideas to solve problems and make innovative and useful contributions to the topic under discussion.

Creativity is seen as a higher-order thinking skill on/in Bloom's revised taxonomy by Krathwohl (2002). For that to happen, however, we must design challenging activities or authentic content projects that engage students in deep learning through problem posing, analysis, evaluation, and solution with justifications. Such activities and engagement afford opportunities and create the necessary situations for context-specific language socialization, in contrast to some superficial fill-in-the-gaps and picture comparison tasks common in L2 acquisition classes. We must teach the content knowledge with their creative projects and deliberately build their creative competency as well as the associated language form/function with scaffolding. We must also create a culture for creativity.

2.3. Collaboration

According to the SCSA, Collaboration is “the practice of working together to achieve a common goal” (para 7), with collective talent and expertise as well as necessary tools, including technology. Collaboration, an essential 21st-century skill, is important because students need it for

school and their work in society. According to The Cambridge Life Competencies Framework (2020), competence in collaboration means taking responsibility for one's own contribution to group tasks, effective group interaction, and the ability to manage and share tasks in group activities for the successful completion of the tasks and activities. Effective collaboration in group problem-solving can utilize multiple perspectives and expertise, resulting in more creative and higher-quality solutions (OECD, 2013) with more opportunities for learning and using situational and contextual language authentically with feedback.

Collaborative work activity or project is a good opportunity for teammates to learn respectfully as well as to evaluate and respond to contributions constructively. Students also get to develop collaborative work management and conflict resolution skills. As stated in The Cambridge Life Competencies Framework (2020), we must remember that students, especially L2 students, must build collaborative skills by working effectively with diverse people and perspectives. We cannot assume they know and tell them to work collaboratively. They need collaborative skills to be taught with the scaffolding for decision-making, role assignment, materials management, flexibility practices, and language use situationally and contextually. They need to be shown how to compromise for common goals responsibly with scaffolded demonstration. It is also important for students to learn how to effectively communicate collaborative work, acknowledging valuable contributions made by team members for group cohesion and institutional profitability. Through such practices, we can help L2 students develop important generalizable professional and life skills such as teamwork, interdisciplinary skills, and the associated language form/function necessary for authentic communication. Such knowledge equips learners with useful language and interpersonal skills acquired experientially with authentic real-world communication tasks and projects for further study and work.

2.4. Communication

The Cambridge Life Competencies Framework (2020) cites Cenere et al. (2015) definition of Communication as an essential skill for sharing information and ideas and expressing feelings and arguments. It further explains that communication competency means facilitating interaction, participating with appropriate confidence and clarity, and using contextually and situationally appropriate language and register. In other words, building communication competencies means learners develop communication skills by engaging in collaborative problem-solving activities by communicating with each other discussing the problem and the solutions.

Learners need to be directed to and provide scaffolding topic- and situation-appropriate language and taught strategies for managing conversations and expressing themselves clearly and effectively.

The SCSA defines Communication as “the practice of conveying ideas quickly and clearly” (para 10). It is about expressing thoughts clearly, concisely, precisely; communicating instructions coherently; and motivating others powerfully. Communication skills must be built with the necessary tools (e.g., digital tools and environments) to achieve personal and group goals for effective information sharing in various formats. Per The Cambridge Life Competencies Framework (2020), communication competencies are broadly beneficial to L2 students in and outside schools for facilitating immediate everyday as well as abstract professional communication needs. Communicative culture, needs, and environment must be created to cultivate effective communication skills. Authentic, real-world activities that engage learners in communication practice must be designed and implemented. Language and communication tools and strategies must be scaffolded.

2.5. Competencies in Digital Literacy

Competencies in Digital Literacy are believed to be the effective use of digital resources in teaching and learning and have been promoted as components of an inclusive view of digital literacy (Gruszczynska & Pountney, 2013). Gilster (1997) defines digital literacy as “the ability to properly use and evaluate digital resources, tools and services, and apply it to lifelong learning processes” (1997, p. 220). For Janssen et al. (2013), digital competencies also involve “particular knowledge and attitudes regarding legal and ethical aspects, privacy and security, as well as understanding the role of ICT in society and a balanced attitude towards technology...” (p. 480, cited in Falloon, 2020). These definitions and views stress the importance of technical as well as sociocultural knowledge and critical thinking elements for digital competencies. Janssen et al., (2013) summarized digital competency as an understanding of terminology, using technologies for basic purposes, and effectively integrating digital technologies into everyday life, work, and creative purposes. Digitally-supported collaboration, communication, information, privacy and security management, and learning new technologies for lifelong learning are seen as components of digital literacy.

Competence in digital literacy means having the essential skills needed to live, learn, and work, including for L2 students. However, Indah et al. (2022) review of the literature showed

that students have difficulty in using computers (Yang et al., 2016), superficial knowledge of the technologies (Bullen et al., 2008), and problem solving skills (Kvavik, 2005). Indah et al. (2022) study of English as a Foreign Language (EFL) students' research skills, critical thinking skills, and their digital literacy in Indonesia showed a significant correlation between research competence and digital literacy.

The importance of competency in digital literacy is summarized in The Cambridge Life Competencies Framework (2020) as an essential skill for learners. Competency in it is empowerment for connection, effective collaboration, innovative creation, and multimodal communication on a broader scale throughout their educational journey and life. More specifically, students with digital literacy competence can make informed decisions based on their evaluation of information and knowledge beyond their books, regions, and even nations. They learn about the possibilities of sophisticated knowledge creation and presentation as well as understand their potential for contributing to larger communities of practice. As suggested in The Cambridge Life Competencies Framework (2020), digital literacy competence can be built as a separate subject (e.g., a digital literacy course) or embedded in the other subject content (e.g., ethics and responsibilities in digital communication). However, L2 students must usually learn school subject content while still learning a second language, with rare option to invest in separate training in digital literacy. As such, building competency in digital literacy with the embedded model is more appropriate for them because this model is conducive for L2 students to learn the prescribed subject content with digital tools as they also learn the situationally and contextually associated language.

In summary, the definitions of and the rationale above clearly show that the five C's are essential skills that need to be taught seriously and deliberately, especially to L2 students, who are still developing their L2 while learning content subjects necessary to complete their schooling. The interest in the second language education field in helping L2 students was also noted. However, the field's current understanding of the five C's, especially about how they should be taught, lack depth as they are used as tasks for practicing language form. When they are taught (e.g., digital literacy), they are taught discretely, not in connection to other skills such as CT and language development authentically with real-world tasks as advocated in the literature. The discrepancies between what the five C's are supposed to do and how they are implemented are due to the reductionist second language acquisition view within the formal linguistics paradigm that does not go beyond teaching discrete language form. This view neglects L2 students' need for the

simultaneous development of language, curriculum subject content, and 21st-century skills authentically in real-world contexts outlined in the WIDA Standards Framework (2020). To address this issue, we must turn to a language socialization view within the systemic functional linguistics paradigm (Beckett, 1999; 2023; Beckett, Slater, & Mohan, 2020).

3. Language Socialization View Within The Systemic Functional Linguistics Paradigm

3.1. Language Socialization View

Language socialization "is compatible with a set of theories that are performance or activity based and critical of structuralist views that treats activity exclusively as the product of structure" (Ochs, 1990, p. 304). From this theoretical perspective, "activity mediates linguistic and sociocultural knowledge" and "knowledge and activity impact one another" (Ochs, 1988, p. 15). That is, language and knowledge are developed by engaging in authentic activities such as collaborative social studies projects (e.g., Beckett, 2023).

3.2. Systemic Functional Linguistics Paradigm

The language socialization view is in alignment with the Hallidayan (1994) systemic functional linguistics (SFL) paradigm (Beckett, 1999; 2023; Slater & Beckett, 2020). From SFL perspective, we use language for contextual purposes (Eggins, 2004) to make contextual meanings (Halliday & Matthiessen, 2014) for professional and social activities (Christie & Unsworth, 2000). For SFL, the units of analysis are contexts of culture and contexts of situation, *field*, *tenor*, and *mode* to explore the situation (e.g., subject content and associated language). With the SFL view, it is possible to explore the simultaneous development of interpersonal and ideational (academic) discourse and authentic disciplinary register, addressing second language students' needs, including academic cultures, authentically and simultaneously (Mohan et al., 2001) identified above. Disciplinary discourse development includes "lexical, grammatical, and discourse features of academic registers that make the technical and specialized meanings" (Schleppegrell, 2004, p. 152) that need a deliberate and systematic approach. As I suggested elsewhere (e.g., Beckett, 2023), project-based learning (BPL) can be that approach.

According to Gerot (1995), SFL focuses on how language is used for meaning making contextually about purposes (genre), field (activity and subject matter), tenor (relationship between

language users), and mode (channel or medium of communication). *Field* refers to “what’s going on with reference to what” experiential meaning about a phenomenon, capturing both activity focus and object focus (Gerot, 1995, p. 39). “These are realized in wordings through choices within the lexicogrammatical system called TRANSITIVITY – choices of Process, Participants, and Circumstances” (Gerot, 1995, p. 39). This view is different from the traditional formal linguistic one in that we teach lexicogrammar in texts to help understand its function, not because a grammatical feature is on the agenda for the day. An example of how the lexicogrammar can work in detail appears in Slater (1998), in which the concept of “storylines” (Longacre, 1990) is used to analyze examples of causal discourse of the water cycle. Longacre’s work shows how verb tense in narratives (form) is used to construct function, with the simple past capturing the plot, the past continuous showing actions occurring behind or alongside the plot, and existential verbs establishing the setting.

4. Project-Based Learning for the Five C’s

Project-based learning (PBL) is an educational approach for achieving various goals, “addressing students’ needs for real-world learning” (Beckett, Under Review, p. 4). Such need for the purpose of this article is building essential generalizable skills such as critical thinking, creativity, collaboration, and digital literacy, contextuality and situationally while also developing associated language form and function. Project work can serve as language socialization activities or sociocultural contexts for teaching and learning curriculum content, school and social cultures, and the development of the five C’s. Projects can serve as activities with which or contexts in which L2 students learn language functionally by listening to, speaking, reading, and writing in L2 to learn content material (Dewey & Dewey, 1915; Mohan, 1986), the five C’s, and associated language (Beckett, 2023). Additionally, students learn how to learn in schools and societies (Beckett, 1999) through those projects. As Dooly (2020) reminds us, PBL, especially technology-mediated PBL, affords opportunities for target language use authentically and co-construction of knowledge with partners internationally.

Teachers and students can design and implement one project to teach and learn all five C’s: critical thinking, creativity, collaboration, communication, and competence in digital literacy. One project for all five C’s is more complex and takes longer to implement, possibly focusing on one skill at a time or simultaneously. Or they can design and implement one project for each of

the five C's, as Beckett (2023) did for CT. By working on their projects, students learn language, learn through language, and learn about language (Halliday, 1993), as projects call for theory and practice (Mohan, 1986). One such example is Mohan et al. (2015) discussion of PBL study, where they illustrate how students worked with *action discourse*, *reporting discourse*, and *expounding discourse* with a theory practice structure. This is also a good example of how SFL-informed PBL serves the purpose of teaching and learning language functionally, contextually, and situationally (Mohan, 1989), connecting language *Form* (*lexicogrammar* in SFL) and *Function/meaning* (*semantic function* in SFL). Another example is that of Slater and Beckett (2019) project called "Applying for graduate school".

5. Project ideas for the Five C's

5.1. Critical Thinking Project Idea

Teaching 21st-century skills contextually in curriculum contexts from an SFL perspective can present challenges to teachers who are used to teaching discrete skills. In this section, I provide SFL-informed project ideas for Critical thinking, Creativity, Collaboration, Communication, and Competency for digital literacy. Beckett's (2023) social studies social media project for CT and language development is a good example of critical thinking. In that article, I illustrate how CT can be taught through a social studies social media project from SFL perspectives and practices using The Appraisal Framework (Martin & White, 2005), focusing particularly on the Attitude language system and Affect, Judgment, and Appreciation language resources. This project is a good example of focusing on developing one of the five C's and associated language within social studies content using digital technology and how that project can be done collaboratively and communicatively. It calls for creative proposals for alternatives as well.

5.2. Creativity Project Idea

Recall that creativity is about generating new ideas, solutions, posing new questions by thinking outside the box through analysis and evaluation and utilizing knowledge and tools. To make this happen, students need challenging activities or authentic content projects. A collaborative project on creative solutions to climate change based on a unit in science curriculum can be an appropriate idea. For this project, students can be asked to study their climate change unit that engages students in deep learning through problem posing, analysis, evaluation, and

solution with justifications. By doing so, they learn the necessary situation and context-specific language, not some superficial fill-in-the-gaps or picture comparison tasks. We must and can teach the content knowledge for their creative projects and deliberately build their creative competency. Simultaneously, we can teach the associated language form/function with scaffolding and practice. Such a project can also help create a culture of/for creativity.

5.3. Collaboration Project Idea

To reiterate, collaboration is about working together to achieve goals with collective talent, expertise, and necessary tools, including technology. This is an important competence as students must take responsibility, manage and share tasks and activities for effective collaboration by working on collaborative projects, especially in diverse contexts. Students and teachers can design and implement a collaborative project on understanding local elections based on an existing curriculum. In groups of four or five, students can collaboratively decide their plans for this project, identifying their goals and discussing the procedures necessary to achieve their goals. They can then decide on tasks and responsibilities, brainstorm for language and tools, and explore collaboration strategies necessary for the successful implantation of their plans toward achieving their project goals.

Additionally, students can keep project diaries focusing on collaboration successes and challenges, noting contributors to effective communication and breakdowns. Students can be guided to study recommended strategies for building effective communication skills and use that information to analyze their diaries. They can then discuss their findings with implications for further learning they need for more collaboration competency, along with their presentations and discussions of what they learned about local elections. Such a project and implementation can be useful for L2 students who need to build collaborative skills by working with diverse people and perspectives through hands-on and minds-on authentic projects while also learning associated language form and function.

5.4. Communication Project Idea

Communication is an essential skill for sharing information and ideas, and expressing feelings and arguments with confidence and clarity, and using contextually and situationally

appropriate language and register. Communication skills are developed through authentic collaborative problem-solving activities that require communicating ideas on problems and discussing solutions, precisely, coherently, and powerfully. A multimodal project on effective communication based on an existing curriculum can help foster communication skills. For such a project, teachers and students can brainstorm on the types of communication (e.g., written, audio, video, etc.), decide on the goals for and purposes of, and due dates of the project, preview the potential language required for the project and locate other tools necessary for successful completion of the project. Tasks and responsibilities can be agreed on and assigned, followed by the implementation of the project.

As suggested for the collaboration project, students can study their communication project by keeping and analyzing project diaries, focusing on communication successes and breakdowns, noting contributing factors to success and challenges. Students can analyze, discuss, and present the findings from their project diaries and communication projects. Based on their findings, students can make recommendations for effective communication skills, building strategies for managing conversations and expressing themselves clearly and effectively. Such a project design and implementation can be useful for L2 students who need to enhance their communication skills by researching and learning how to communicate with authentic projects while also learning associated language form and function.

5.5. Competency in Digital Literacy Project Idea

Competency in digital literacy is essential for creativity, collaboration, communication, and effective articulation of thoughts for school, work, and life; because digital literacy includes the ability to evaluate as well as proper and ethical use of digital tools and resources. However, students lack deep knowledge of the technologies (Bullen et al., 2008) and need to learn to build their competency (Indah et al, 2022) also as they learn subject content (e.g., ethics and responsibilities in digital communication). A digital literacy development research project can help build the necessary digital literacy content, skills, and associated language form and function situationally and contextually.

Teachers and students can decide on the goals, scope, and purpose of the project. For example, they can decide on conducting internet research to find out the definitions of digital literacy, synthesize their findings, compare them to what they already know, identify the digital literacy components that need to be added to their repertoire, and propose a curriculum context

through which they can develop them. They can present their findings and discuss their synthesis as well as their proposal with justifications. By doing so, students can build their digital competencies, find out additional skills they need to acquire in connection to their existing curriculum, and learn digital literacy-related language form and function, addressing research findings that students need digital literacy competency building (Veletsianos et al., 2016; Xie, 2021).

6. Conclusion

This article, I proposed a project-based approach for teaching the five C's of the 21st-century skills – Critical Thinking (CT), Creativity, Collaboration, Communication, and Competencies in digital literacy, to promote deeper learning, higher-order thinking, and language development. PBL allows for competency building and language development contextually and functionally that L2 students need. This proposal addresses the weaknesses of the current teacher-centered decontextualized discrete skills teaching practice that does not serve L2 students' needs. Language socialization practice within the SFL paradigm is pointed out to be ideal for informing five C's project work. Students can develop their five C's competencies by asking vital questions, gathering, assessing, and interpreting information, as well as posing and solving problems, drawing conclusions, and proposing alternatives with justification (Beckett, 2023). Teachers and students can utilize the project ideas provided in this article with necessary modifications to their contexts and needs. They may also add components such as the assessment they may need to those project ideas. Depending on their needs and contextual possibilities, they may design, implement, and assess semester-long projects for competency development in all five C's, or design and implement one project for each of the five C's at a time. Due to the page limit, grade-level contextualizations are not discussed in this article. However, the arguments and proposals included are applicable for all contexts. Researchers, teachers, and curriculum developers may utilize them for their needs with modifications.

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