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Fostering Career-Ready Skills and CS2023 Dispositions through Active Engagement of Gen Z and Gen Alpha MIS Students

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Abstract

As institutions of higher learning seek to educate current and future students, they will be studying the technological tale of two generations: Gen Z (born between 1997 and 2012) and Gen Alpha (born between 2012 and 2024). Both generations are natives to a "digitally immersed world" and this is becoming especially evident in how they learn and engage in the classroom, as well as how they will develop and maintain skills and knowledge for their careers. Adding to these challenges is the increased movement toward online courses and the fact that employers value professional skills that may be difficult to address in that environment. In this article, the authors examine characteristics of both Gen Z and Gen Alpha, their learning and engagement styles, and the two-fold incorporation of career-focused skills into the learning and engagement process. The authors provide a sample exercise based on the Agile (scrum) mindset and project-based learning to illustrate the incorporation of professional dispositions and a career-ready skill-based exercise in the learning process of both traditionally delivered and online undergraduate management information systems (MIS) courses. By aligning engaging, career-focused exercises with how these Gen Z and Gen Alpha "digital natives" learn, MIS instructors can not only impart concepts and technical skills, but also support students' development of critical thinking, collaboration, adaptability, and communication—skills essential for success in the workplace as reported by employers and dispositions within CS2023.

Keywords: Gen Alpha, Gen Z, Employer expectations, Generational learning styles, Classroom engagement, Agile Project Management, Scrum, Career-ready skills, CS2023 dispositions

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Christine Ladwig and Dana Schwieger

1. INTRODUCTION

Projections for the number of traditional college-age students predict decline a decline of 15% between 2025 to 2029 (Grawe, 2018). At the same time, the number of educational opportunities outside the realm of the historically familiar institutes of higher education vying for those students continues to rise (i.e., open educational resources, Massive Open Online Courses (MOOCs), YouTube and TikTok tutorial videos, coding schools, industry specific certifications, etc.). In addition, the number of teens, young adults, and self-directed learners rethinking traditional college and career paths is increasing (Hanover Research, 2025).

If an institution of higher learning overcomes such obstacles and is successful in attracting students from this diminishing pool of college-eligible candidates, the next important issue becomes engaging and preparing these Gen Z and Gen Alpha students to meet the needs of employers and the workforce. In 2025, the top skills sought by hiring organizations included problem-solving skills, the ability to work in a team, and written communication (NACE, 2024). These requirements are echoed in the January 2024 Joint Task Force on Computer Science Curricula framework publication (CS2023), which included discussion of "Professional Dispositions" for computer science graduates (Kumar, Raj, Aly, et al., 2024). In the Task Force report, characteristics—such as "Adaptable", "Collaborative", and "Inventive"—are cited as "essential for not just succeeding in the workplace but also thriving as a professional" (Kumar, et al., 2024, pg. 56). The alignment between these surveys and studies provides clear guidance for what skills and knowledge higher education should be emphasizing.

Complicating this task of training existing and upcoming college students, however, is the fact that Gen Z (born between 1997 & 2012) and Gen Alpha (born between 2012 & 2024) students have evolving learning styles, wholly immersed in a digital milieu. Traditional college content delivery methods, such as Face-to-Face fixed schedule sessions and lectures, do not align with the methods that will engage and educate these 21st century learners. Researchers have emphasized that teachers should "resist the temptation to tell" and relating to students the way instructors themselves were taught—with the teacher taking center stage, talking *at* students, and "telling" them what they should know (Jukes, McCain & Crockett, 2010; pg. 80). Gen Z and Gen Alpha students are digital natives, and as such passive learning does not engage them; they are accustomed to a highly interactive and fast-moving environment (Jukes, McCain & Crockett, 2010, pg. 81-82). It is therefore essential that MIS assignments, exercises and content delivery transform to meet students "where they live" by incorporating methods such as microlearning, video-based lessons, gamified content, cloud-based collaborative tools, social media integration, and other highly interactive techniques (McCrindle Research, 2025).

One established successful method of engaging both Gen Z and Gen Alpha students is to incorporate a project-based learning approach. In 1998 the Bertlesman Foundation (a NFP think tank) conducted an experiment with grade school students which greatly demonstrates benefits of this active learning: 100 students were taught concepts using traditional lecture methods and 100 students were taught using non-traditional, project-based methods. At the end of a year of instruction, both groups were given a standardized test gauging what they learned, and the scores were identical. One year later the same 200 students were given the same standardized test; this time, however, all the lectured students scored less than 15 percent, and all the project-based learners scored more than 70 percent on the exam. Researchers believe the latter group connected the concepts more readily with the complex relationships of the world, and

developed, through the project-based learning, better retention of the concepts and knowledge (Jukes, McCain & Crockett, 2010, pg. 84-85).

To therefore address the necessary synthesis between learning styles of Gen Z and Gen Alpha students, the requirements of employers, and the professional dispositions important to computer science and management information science (MIS) learners, as well as to focus on a transition from traditional methods of instruction to the engagement of students through active, project-based learning, the authors suggest that instructors consider incorporating a dimension of Agile project management—Scrum—as a component of their online and classroom instruction.

Rooted in iterative, team-based problem-solving, Scrum promotes the very competencies sought by employers and emphasized in frameworks like CS2023—namely, critical thinking, teamwork, adaptability, and communication. Through Scrum methodology, students develop problem-solving and collaborative skills in the fast-paced, interactive environment so well-known to Gen Z and Gen Alpha learners. Research has demonstrated when "project work is central rather than peripheral to the curriculum" then "quality of learning and higher level cognitive development" results (Jukes, McCain & Crockett, 2010, pg. 82-83). By adding project based learning exercises to the MIS curriculum, instructors can simultaneously engage students while preparing them for 21st century work and careers.

Therefore, in the next section, the authors first examine characteristics of the current and upcoming populations of students (Gen Z and Gen Alpha) that faculty should consider as they develop materials to teach skills to MIS undergraduates. Subsequent sections discuss the highlights of both employer sought skills and professional dispositions (CS2023), and how project-based learning—like the project management orientation of Scrum—may be used to engage Gen Z and Gen Alpha students in learning and developing the skills needed for their lives and careers.

2. LITERATURE REVIEW

In 2021, Schwieger and Ladwig published a paper examining the characteristics of Millennial and Gen Z learners and how university faculty could prepare those students to meet the needs of employers. Since that time, society has experienced significant change including the residual effects of a worldwide pandemic, increased integration of technology into daily life, the widespread application of artificial intelligence (AI), and the progression of the next generation of students through the educational pipeline. As university programs begin preparing for Generation Alpha—the upcoming generation of college-age students—it is important to re-evaluate the characteristics of incoming students and the strategies used to prepare them for the workplace and next steps in their life journeys. Figure 1 illustrates the structured approach applied in the paper to the examination and integration of these factors in the educational process.

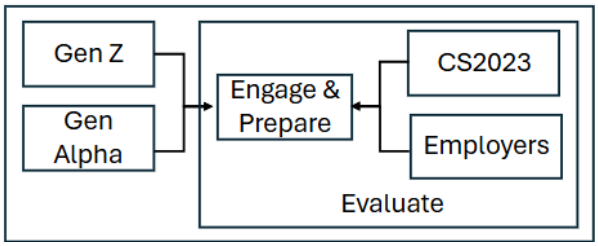

Figure 1 Educational Pipeline

Generation Z Students

The population known as Generation Z (also "Gen Z"; "Gen Zers" or "Zoomers" born between 1997 and 2012), was raised in an "always on" technological environment. With the introduction of the iPhone in 2007 and common use of mobile devices for social media and on-demand entertainment, having constant connectivity has been commonplace (Dimock, 2019, Hanover Research, 2025).

In a study of approximately 1000 U.S. high school students between the ages of 16 and 19 conducted by Hanover Research (2025), Gen Z was described as being individualistic and creative, open-minded, altruistic, career minded, and adept with a variety of technology, including AI. Of the Gen Zers who frequently use AI, 80% of those surveyed felt that it would help them better use their time to improve their work/life balance (McKinsey & Company, 2022).

Gen Z's lifespan and school years were shaped by the COVID 19 pandemic, thus manifesting negatively in their academic and social development. Gen Zs long for relationships and belonging to an inclusive environment and therefore tend to seek interaction with others

both online and in person (McKinsey & Company, 2024; Vet, 2025). Approximately one third of the students surveyed indicated feeling unprepared for college life, noting a lack of "self-discipline, study skills, communication skills, and academic knowledge" (Hanover Research, 2024, pg. 4).

Generation Alpha Students

Generation Alpha (also known as "Global Gen" or "Generation Glass"), the next cohort of students to be entering college, were born between 2012 and 2024 (Hanover Research, 2025). Thus, their characteristics are still developing. However, like Gen Z, they are also characterized as digital natives with much of their learning technology-based.

Generation Alpha was first mentioned in 2005 by McCrindle Research (Thomas & George, 2021, 118) as "born in a technologically immersed world and living with artificial intelligence." Considered to be the "most materially endowed generation ever", Gen Alphas have had unprecedented access to devices such as smartphones, tablets, and gaming computers. Their natural technical savvy is expected to significantly influence the way this generation shops, seeks entertainment, socializes, and learns (McCrindle Research, 2025).

Unsurprisingly, the upcoming Generation Alpha population has been described as even more "digital-forward" than Generation Z. Approximately 43% of Alphas owned a tablet before age six, and 58% owned a smartphone by age 10 (Trovato, 2024). They also use technology differently from prior generations, with a focus on gamified learning, social platforms, and generative AI. They learn in "sound bites" and make connections and decisions through technology. Gen Alphas also create as much online content as they consume, unlike Gen Z (who mostly consume) (Buleen, 2025).

Gen Alpha's focus on intense technology usage, skill-based learning, and collaboration has resulted in a continued shift in educational engagement relative to the preceding population of Gen Z learners. Elementary and secondary schools are changing from "structural and auditory learning to engaging, visual, multimodal, and hands-on methods" in an effort to meet the evolving needs of Gen Alpha (McCrindle Research, 2020, 12).

Gen Alpha's interest in unconventional methods of gaining knowledge and trying new things influences how they learn. This generation is highly connected to toys and interactive learning platforms, having a strong interest in gaming and virtual and augmented reality. As a result, they are characterized as having low attention spans and are socially isolated. Although they may seek collaborative opportunities, they do not always know the best approach to group work or the skills they need to accomplish goals cooperatively. With their world dominated by electronic technology, social networks, gaming, and streaming services, the incorporation of these aspects is becoming indispensable to Gen Alpha's learning and future career success (Runcan & Runcan, 2025). Mondo (2025), an online staffing agency, advised Alpha's future employers to prepare for their arrival by adopting advanced technologies such as virtual reality and augmented reality, fostering teamwork and open communication, and investing in continuous learning resources.

Percent/hrs of Gen Alpha Online Use	Social Media General Activity
50%	Social media apps
85%	Regular use of YouTube
60%	TikTok
4.5 hrs/day	Screen time
2.5 hrs/day	Social media use

Table 1. Key Gen Alpha General Social Media Activities (Roza, 2025)

Percent Mentioned	Social Media Purpose Preference
75%	Social gaming-based platforms such as Roblox
65%	Prefer video content over text-based content
45%	Watched online tutorials to learn a new skill
55%	Prefer creating content over consuming it
90%	Social media use contains interactive elements
40%	Social media educational content
85%	Short-form video
80%	Prefer visual social media over text.

Table 2. Gen Alpha Social Media Preference Purpose (Roza, 2025)

Gen Alpha's Perspectives on Social Media and Technology

Figuring prominently in the lives of Gen Alphas is the use of social media. Gen Alpha is intensely interested in the opinions of influencers, and

significantly connected to and involved with social media platforms (i.e., Tik Tok) (Thomas & George, 2021, 124). Key facts and statistics on Alphas' use of these platforms has been studied for years by marketing agencies keen on reaching these well-heeled and influential consumers. The findings are not surprising, but clearly demonstrate and reinforce the connection between this young, upcoming generation and technological socialization:

As represented by the statistics in Tables 1 and 2, Gen Alpha exhibits strong early engagement with social media and screen-based content. On average, these Gen Alphas spend 4.5 hours daily on screens, including 2.5 hours specifically on social media, with a clear preference for mobile use—80% of their online time occurs on smartphones or tablets.

This generation also strongly favors visual and interactive formats. Approximately 65% prefer video content over text, and 85% regularly consume short-form videos, often on platforms like TikTok and YouTube Shorts. Their engagement goes beyond passive viewing—55% prefer creating content, and 90% of their social media activity includes interactive features including likes, shares, or real-time chats. Educational and skill-building content also plays a role, with 40% of social media consumption being educational and 45% having watched tutorials to learn new skills. Gen Alpha also actively participates in gaming-oriented and social platforms like Roblox (used by 75%), underscoring their immersive and participatory digital habits (Roza, 2025).

In examining the two generations, some common themes seem to surface. Both generations:

- turn to short form media to gain information;
- have used social media for educational content;
- value the opinions of others;
- may be socially awkward and desire to connect; and
- seek interaction with others through online mediums.

Now that a profile of the current and upcoming generations of college students has been drawn for the beginning of the model (Fig. 1), the next section identifies skills that will be required by employers in the professional environment.

3. EMPLOYER SOUGHT SKILLS

Computer Science and MIS programs develop their programs and curricula with consideration made for educational frameworks, industry requirements, and employer expectations (Figure 1). These guidelines help universities prepare their graduates to have the skills they need to be employable.

NACE

The National Association of Colleges and Employers (NACE) is a professional association "that connects over 17,000 college career services professionals, early talent recruiting and university relations professionals, and the business solution providers that serve this community" (NACE, 2025, 1). Each year, NACE conducts multiple surveys of their constituents to analyze and provide reports on job forecasts, hiring trends, starting salaries, recruitment and hiring practices, student attitudes and outcomes, and employment of college graduates (NACE, 2025). Table 3 provides a list of the top skills sought by employers in 2025 compared to 2020 and the percentage change in value. Appendix A provides a visual comparison of the two sets of data.

Attribute	% of Respondents		
	2025	2020	Change
Problem-solving skills	88.3	91.2	-2.9
Ability to work in a team	81.0	86.3	-5.3
Communication skills (Written)	77.1	77.5	-.4
Initiative	73.7	69.6	4.1
Strong work ethic	73.2	80.4	-7.2
Technical skills	73.2	65.7	7.5
Communication skills (Verbal)	69.3	69.6	-.3
Flexibility/ Adaptability	67.0	62.7	4.3
Analytical/ quantitative skills	67.0	79.4	-12.4
Detail-oriented	65.9	67.6	-1.7
Interpersonal skills	63.1	62.7	.4
Computer skills	55.9	54.9	1
Leadership	52.5	72.5	-20

Table 3. Skills Sought by Employers (2025)

Skills: According to NACE, the employers surveyed in 2025 valued many of the same top

skills as those surveyed in 2020 (Table 2). NACE's survey of 1000 employers indicated that minimal changes occurred in the ranking of: verbal (-.3%) and written (-.4%) communication, interpersonal skills (.4%), and computer skills (1%). (Table 2). However, Figure 2 illustrates that the value employers placed on some skills changed significantly over the timeframe including the devaluation of leadership (-20%), analytical/quantitative skills (-12.4%), strong work ethic (-7.2%), and teamwork (-5.3%) and an increased value given to technical skills (7.5%), flexibility/adaptability (4.3%), and initiative (4.1%).

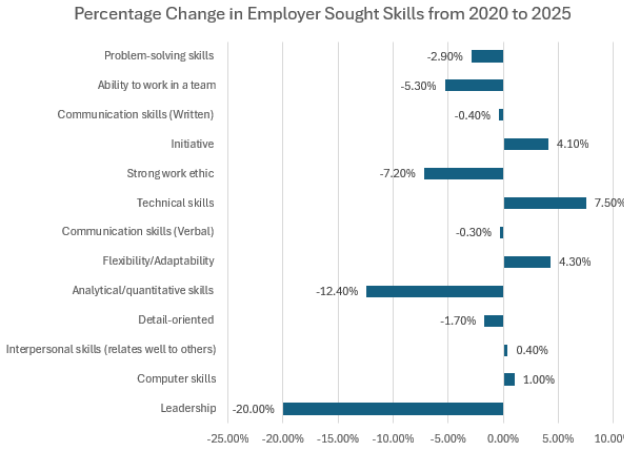

Figure 2 - Change in Skill Value Between 2020 and 2025

CS2023 Professional Dispositions

In January 2024, The Joint Task Force on Computer Science Curriculum published their framework for guiding development of computer science curriculum in undergraduate programs (Kumar et al., 2024). The framework includes a section entitled "Professional dispositions – the whole person view." The task force defined the "Professional Dispositions" by evaluating survey responses of 110 academics and 865 industry practitioners. The task force characterized these knowledge areas as being essential for both success in the workplace and thriving as a professional (p. 56). Many of the areas identified in the task force's study echoed the results of NACE's survey and include:

Adaptable	Continually evolving
Collaborative	Able to work in a team
Inventive	Able to devise new solutions and applying existing solutions to new contexts
Meticulous	Able to ensure the correctness and completeness of a solution
Persistent	Does not give up when problem solving.
Proactive	Able to anticipate issues associated with usability, security, ethics, etc.
Responsible	In all aspects of a solution including design, implementation, and maintenance
Self-directed	Committed to life-long learning

Table 4. Professional dispositions from CS2023 (Kumar et al., 2024)

Such confirmation of the value of these skills underlines the importance of incorporating opportunities for students to develop these skills into course exercises not only for computer science students, but also for all undergraduate students.

With an understanding of both the characteristics of Gen Z and Gen Alpha and the skills that these students will need to be successful in their professional careers, the next section examines a method of engaging and preparing these digital natives through a project based learning application of the fast paced team management environment of Scrum. The authors believe that the Agile mindset of product development theory embodied in Scrum is a highly interactive way to integrate development of the employer sought skills, students' penchant for creative development, the desire for social interaction, and the professional dispositions using generational learning styles.

4. AGILE PROJECT MANAGEMENT & SCRUM METHODOLOGY

Some of the top traits employers are looking for in the next generation of workers include "problem-solving" and "persistence in problem-solving" (Kumar et al., 2024; NACE, 2024); "teamwork" and "collaboration" (Kumar et al., 2024; NACE, 2025); and "flexibility" and "adaptability" (Kumar et al., 2024; NACE, 2025). Because digital learners like Gen Z and Gen Alpha students prefer practical, real-world problems and active engagement, as well as a fast-paced environment (McCrindle Research, 2025), the use

of projects that incorporate the techniques native to the Agile mindset may be an approach to successfully engage these upcoming learners. In the application of Scrum, students largely take responsibility for their own learning, aligning with the transition of center stage from teacher to student.

The origin of Scrum aligns well with the modern workplace that digital native students are and will be encountering. When Takeuchi and Nonaka (1986) first introduced the idea of "Scrum" for product development, their intention was to use the methodology as a change agent: "a vehicle for introducing creative, market-driven ideas and processes into an old, rigid organization" (Takeuchi & Nonaka, 1986). This ideology, as well as the speed, flexibility, and engaging nature offered by the Scrum technique, makes the approach an ideal conduit for the transition between traditional college learning styles, such as lecturing, and the novel requirements of educating Gen Z and Gen Alpha students.

Scrum—inspired by the game rugby—is organized around the idea of the project team going the distance from inception to finished product as a unit; "passing the ball back and forth" in a holistic approach, rather than the established "relay race" sequence of moving from one segment to another (Takeuchi & Nonaka, 1986). Scrum is a dimension of the "Agile Mindset" which embraces key tenants such as adaptability and collaboration.

Modern companies have been looking more and more toward Agile to "create the organization of the future" (Smith, 2019). One study demonstrated that 90 percent of senior executives were looking to adopt Agile ways of working, such as Scrum, into their operations (Deloitte, 2017). Research also demonstrates that newer generations, such as Gen Z, have working and learning preferences that align well with the Agile mindset, such as team-centricity, self-governance, digital modes of accomplishing tasks, collaboration combined with remote and independent work, and quick and continuous feedback (Smith, 2019).

The use of Agile in the classroom is increasing, as instructors appreciate that the influence of this mindset is not limited to the software development industry. For example, Woods and Hulshult (2025) discuss the increasing incorporation of Agile practices into the IT/IS curriculum and described their design of a real-world client project. They believe the incorporation of Agile in the classroom aligns with its continued implementation by organizations as a common methodology for project management. Therefore, student exercises built around the Agile mindset are useful for future application in the workplace; the highly engaging nature of Agile promoting both top employer sought skills (problem-solving, teamwork) and professional dispositions (inventive, collaborative) (Kumar et al., 2024; NACE, 2025).

According to its co-creators, Scrum methodology is a "framework for developing and sustaining complex products" (Schwaber & Sutherland, 2020) and involves certain defined roles: Scrum Master, Product Owner, and Developers. The Scrum Guide details how the framework "helps people, teams, and organizations generate value through adaptive solutions for complex problems" and is founded on lean thinking (Schwaber & Sutherland, 2020).

Project management in Scrum is built around the concept of the "Sprint." All the work necessary to accomplish the goals of the project or product development happens within the Scrum sprints, which are time limited events. The Scrum Team focuses on the Scrum values, described by the co-creators Schwaber & Sutherland (2020) as:

- ***Commitment*** to achieving goals and supporting each other;
- ***Focus*** on the work of the Sprint to make the best possible progress;
- ***Openness*** about the work and its challenges;
- ***Respect*** each other as capable, independent people; and
- ***Courage*** to do the right thing and to work on tough problems.

During the Scrum process, team members are practicing many of the skills and characteristics highlighted as critical for college graduates by the NACE employer survey and the CS2023 report:

Scrum Attribute	Employer Sought Skill (NACE)	Professional Disposition (CS2023)
Self-managing	Initiative	Self-directed
Collaborative	Ability to work in a team	Collaborative
Adaptive	Adaptability/ Flexibility	Adaptive
Problem-Solving	Problem-Solving	Inventive
Identify Impediments	Analytical	Proactive
Commitment	Strong Work Ethic	Responsible

Table 5. Comparing Scrum Attributes (2020) with NACE Survey (2025) and CS2023 (2024) Skills

Using Scrum Methodology to Engage & Prepare

One of the authors of the paper teaches a core undergraduate MIS course taken by all second year college of business students at their university. In this course, the instructor teaches technical skills as well as general MIS concepts. The students seem to enjoy the hands-on technical exercises. However, the portion of the course dedicated to addressing course concepts is not as well received. The incorporation of Scrum and Agile principles is therefore one method of engaging Gen Z and Gen Alpha students in actively learning these concepts. And, as Scrum attributes align well with employer-sought skills and professional dispositions, students will benefit from the former's application to assignments and exercises.

Incorporating Scrum principles into the classroom has numerous advantages. For example, Scrum and the Agile mindset has been the focus of a movement known as "eduScrum". Willy Wijnands, a Dutch chemistry and physics teacher, began experimenting with Scrum in his lessons in 2011. Through the use of the teams, sprints, and technology, eduScrum incorporates the 4 C's of Creativity, Collaboration, Communication, and Critical Thinking that are at the core of learning. Scrum co-founder Jeff Sutherland—a passionate supporter of eduScrum—has said the platform "shows us what Scrum can do when applied in education. It empowers students to become more independent and engaged learners" (Wijands, (eduScrum), 2025).

Because Scrum methodology attributes (Schwaber & Sutherland, 2020) align well with the top employer sought skills (NACE, 2025) and CS2023 Professional Dispositions (Kumar, et al., 2024) for both Gen Z and Gen Alpha, the authors have designed a Scrum-based exercise (see Appendix B & C) incorporating the engagement tools used by these students to learn and develop competencies. In the *Learning in Sprint Mode* exercise, students experience elements of Scrum through self-managing a project that focuses on teaching a MIS concept to their classmates. The assignment incorporates the attributes of initiative, teamwork, adaptability/flexibility, and problem-solving with social media, content creation, digital apps and tools, video learning, dynamic presentation platforms, gamification, and a fast-paced learning mode.

By combining agile frameworks with topics that digital-native students need to know, and incorporating the tools that engage them in content, the authors believe this approach also bridges how Gen Z and Gen Alphas learn with what they need to succeed in tech-driven careers.

5. EVALUATION

Students participating in the *Learning in Sprint Mode* exercise may be evaluated based on "Team Project Quality" which examines the clarity of the concept explanation and practical application, use of interactive elements, and organization of the Nearpod Lesson. "Team Collaboration" may also be measured by participation in standups (meetings) and Sprint tasks. A rubric is provided for instructor use in Appendix B. Instructors may also consider allocating points for the Sprint Retrospective and self-reflection. A linked post-Sprint survey template for students can be adapted by instructors to additionally measure learning through the exercise. The exercise is planned to be incorporated in the fall 2025 semester.

6. CONCLUSION

The student generations (Gen Z; Gen Alpha) attending college campuses over the next few decades will be the most digitally savvy in the history of higher education. As the university classroom continues to evolve from traditional lecture and face-to-face sessions to digital delivery and online, blended, and other hybrid learning environments, so too should the methods of engaging and educating students. Also important is aligning students' generational characteristics with the skill development and knowledge that they will need to be successful in the marketplace and life. Employer surveys and curriculum task force groups have outlined what graduates will need to thrive in the professional industries of computer science and management information systems, including: adaptability, problem-solving skills, ability to work as a team, analytical skills, and communication, among others.

One method of building a bridge between what students need and how they learn is through application of the Agile mindset (through Scrum) in project and assignment design. The attributes of Scrum closely mirror those skills that will benefit students in their professions, including self-management, collaboration, adaptiveness, problem-solving ability, and commitment to goals. Through applying exercises like *Learning in Sprint Mode*, faculty can meet the new generations of students "where they live" and provide engaging ways for these digital natives to learn and develop skills for their constantly evolving futures.

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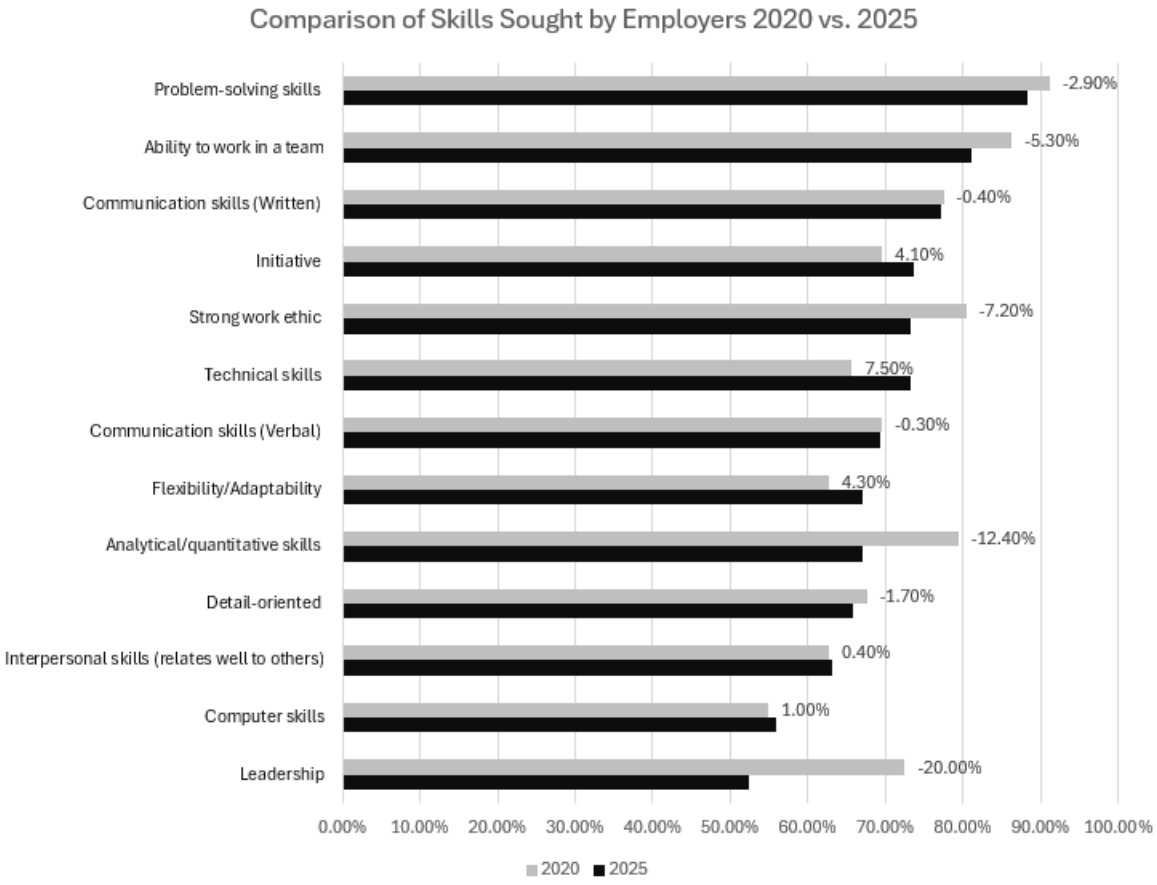
APPENDIX A


Comparison of Skills Sought by Employers 2020 vs. 2025
Problem-solving skills
Ability to work in a team
Communication skills (Written)
Initiative
Strong work ethic
Technical skills
Communication skills (Verbal)
Flexibility/Adaptability
Analytical/quantitative skills
Detail-oriented
Interpersonal skills (relates well to others)
Computer skills
Leadership
-2.90%
-5.30%
-0.40%
4.10%
-7.20%
7.50%
-0.30%
4.30%
-12.40%
-1.70%
0.40%
1.00%
-20.00%
0.00% 10.00% 20.00% 30.00% 40.00% 50.00% 60.00% 70.00% 80.00% 90.00% 100.00%
2020
2025

APPENDIX B
Next Generation Scrum Attributes Exercise:
Learning in Sprint Mode
Instructor's Notes

Introduction

In the *Learning in Sprint Mode* exercise, the authors focus on creating a bridge between what students need and how they learn by applying the Agile mindset (through Scrum) in project and assignment design. The attributes of Scrum closely mirror those skills that will benefit students in their professions, including self-management, collaboration, adaptiveness, problem-solving ability, and commitment to goals. The benefits of incorporating Scrum as an educational tool have been recognized by teachers such as Willy Wijnands, founder of eduScrum (2011). Including the principles of Creativity, Collaboration, Communication, and Creative Thinking as an adaptation of Scrum is a novel approach to engage and prepare Gen Z and Gen Alpha students.

The following sample exercise synthesizes the Scrum framework and attributes (along with employer sought skills and CS2023 professional dispositions) with aspects of how Gen Z and Gen Alpha students learn and experience the world. It illustrates how the Scrum principles—also representative of those characteristics required by employers and sought in industry professionals--can be integrated into many assignments and exercises. It also uses tools such as social media and interactive platforms to incorporate aspects of the Gen Z and Gen Alpha digital world.

Overview

In this exercise, students will use embedded video and quiz questions to gamify and teach their classmates a MIS course concept. Students will also have the opportunity through this assignment to visualize and communicate a practical, real-world application of that concept. The platform used for deliverables will be "Nearpod"—a free, interactive platform that can be used in either live or self-paced instruction form. The Nearpod site is located at http://www.nearpod.com. Nearpod includes many interactive and engaging elements, and also allows for the addition of videos and other content making it an ideal platform for Gen Z and Gen Alpha students to develop and present content.

Preparation

- **Select a Concept**. Instructors can select a concept/practical application for students to work with, such as those in the chart below. Instructors may assign all students the same concept, or assign varied concepts to different groups:

MIS Concept	What Students Can Explain	Practical Application Proposal
Enterprise Resource Planning	How different departments share data in one system	Draw or build a chart showing how sales, inventory, and HR connect
Big Data	The advantages and disadvantages of big data	Select YouTube; Spotify; Netflix; Tik Tok (trending hashtags) and gather data on the most popular content. Look for patterns in the data.
Data Warehouses & Data Lakes	Define and compare these concepts	Take a raw data file with many different types of data (Lake) and extract just structured data to add to Excel (Warehouse)
Database Management	How data is stored and organized in tables	Create a basic table in Excel or Google Sheets to store products for a business
Decision Support Systems	Tech tools that help make better decisions	Use Excel to compare 2 product options with a chart (phones or laptops)
E-commerce Systems	How online shopping works, including payment and tracking	Create a mock product page with fake "buy" buttons
AI in Business	How AI helps with product recommendations or automates tasks	Show how Spotify or TikTok recommends content, or describe a chatbot idea
Customer Relationship Management (CRM)	How businesses manage customer relationships and track information	Create a sample tracker for a client; decide what would be important to include
Knowledge Management	Different types of knowledge and the Knowledge Management Cycle	Create a guide that others can use to navigate a problem or issue

- **Organize the Groups.** Form Teams of 4-5 students as suggested by Scrum. This size is small enough to remain workable and large enough to deliver significant work.
- **Students Meet for Planning** During the initial planning meeting, the Team should appoint a Scrum Master, discuss what tasks (product backlog) they will accomplish during the Sprints, and set up the Scrum Board.
- **Appoint a Scrum Master.** The Scrum Master helps to organize the Team, but they are concurrently a working member of the group. Scrum Master responsibilities will include: keeping track of the Scrum Board which is the visual board that keeps tabs on the work of the group, helping to make assignments, coordinating the Sprints.
- **Set up Scrum Board.** Students will set up their task board to keep track of the Scrum: **To Do → In Progress → Done.** This is easily accomplished with a digital sticky note app like LucidSpark. There is limited free use of the app and it includes a Scrum Board template.
- **Sprint**. Students should plan their Sprint to occur within a 1-2 week timeframe. Students decide what tasks will be accomplished during the Sprint and who will accomplish each task. The Scrum Master is responsible for updating the Scrum Board.
- **Daily Scrum.** A daily 15 minute meeting either in person, by Zoom or Teams, or by conference call. The Team should answer the following: "What did we accomplish yesterday? What will we do today?"

- **Delivery of the final Product.** Using the platform *Nearpod*, Scrum Teams will add the various components: (1) A concept explainer video or other visual/interactive way to explain the concept; (2) A Quiz on the concept; and a (3) Demonstration of a practical application of the concept. Students can access the Nearpod lesson created by each Scrum Team from any device or location using the "Join Lesson" code.
- **Sprint Retrospective.** Students review how the project went; a template for a survey on this segment is posted here: https://docs.google.com/forms/d/e/1FAIpQLSeZ2-ObyrV3F_dgJqkYr7G8XX97JYwHCDHLdaNDOs2Z4PlWdw/viewform?usp=header
- **Use of AI**. Students are permitted to use AI in the exercise to generate ideas and create content for developing their teaching lesson. However, they are cautioned to use this tool judiciously; as Woods and Hulshult (2025; pg.46) noted in their Scrum exercise: "Students are expected to understand the limitations of AI and take responsibility for all of the content included in the project, for example, making sure that AI-generated content is correct and relevant to the project."

Evaluation

Instructors may use the following rubric (based on a 20-point scale) or a variation to evaluate student work:

Team Project Quality (10 pts)

Criteria	Points
Clear explanation of the "Concept"	3
Clarity of the "Practical Application" element	3
Use of interactive/multimedia elements	2
Overall organization of the Nearpod Lesson	2

Team Collaboration (10 points)

Criteria	Points
Participated in team meetings/standups	5
Contributed to Sprint tasks	5

For the sample exercise below, the authors selected the MIS concept "Knowledge Management Cycle" and the practical application is to create a "Survival Guide for College Freshmen." A worksheet/handout for the students on the selected concept is located on the next pages. This format can be adjusted for the assignment of other MIS concepts (or IT/Computer Science concepts). The authors also created the exercise in Nearpod, which is the platform students will use to organize their own content. This self-paced Nearpod Lesson may be accessed through the Join Code: CMAXH at https://nearpod.com/student/. If you'd like to use the same content and practical application as the sample exercise, this join code can be shared directly with your students, or you can add the lesson and modify it for your class through the link below.

Instructors to add to your Nearpod library please use this link:

https://np1.nearpod.com/sharePresentation.php?code=5da1916ae526f8e8679e77c729a49e71-1&oc=user-created&utm_source=link

A copy of the slides included in the Nearpod Lesson is located below:

APPENDIX C
Next Generation Scrum Attributes Exercise:
Learning in Sprint Mode
Student Team Assignment

LEARNING IN SPRINT MODE

A Scrum Based Team Assignment

Introduction to *Learning in Sprint Mode*

This assignment uses a dimension of the Agile mindset known as Scrum.

During this exercise you will focus on understanding a concept, teaching that concept, and creating a practical application of that concept.

This exercise depends on teamwork, innovation, and problem-solving.

See how Scrum works by watching the YouTube video “Scrum in under 5 minutes” on the next slide. You can also find it here:

(https://www.youtube.com/watch?v=2Vt7Ik8Ublw)

Your Team's Concept

The Knowledge Management Cycle

Create knowledge

Capture knowledge – Identify & collect

Refine knowledge – Placed in context & made usable

Store knowledge – Stored so accessible

Manage knowledge – Kept current, relevant, & accurate

Disseminate knowledge – Available in useful format

See the video "Knowledge Management in 5 minutes or less" on the next slide or at this link:

https://www.youtube.com/watch?v=k3jo7oWzUUc

Your Team's Practical Application

Survival Guide for College Freshmen

Your Team will take the MIS Knowledge Management Cycle concept and apply it to creating a guide for freshmen at your college or university

Your Team's Platform: Nearpod

Your Team will be using the teaching platform "Nearpod" to create your lesson, which is located at

www. Nearpod.com

And YES that is the very platform you are using right now!

There is a video on the next slide that walks you through using Nearpod for teaching. Also here is the link:

https://www.youtube.com/watch?v=EZcLQHiNY3U&t=64s

After the video, see the next slide for a PDF of the Scrum Guide, which may be helpful too!

LEARNING IN SPRINT MODE:

SIX STEPS

A Scrum Based Team Assignment

LEARNING IN SPRINT MODE:

STEP ONE

A Scrum Based Team Assignment

Organize your Team (4-5 students)* and receive the product backlog. The product backlog is the dynamic, prioritized list of all the work that needs to be completed for the product.

The product backlog for this project is:

- Understand the MIS Concept and Scrum
- Understand how to use Nearpod as a teaching tool
- Set up a Scrum Board to track the Team's Sprint
- Develop a teaching lesson in Nearpod for your Team's concept
- Develop a plan to apply your concept in the practical application of a College Survival Guide for Freshmen that could be used at your Team's institution

*Team size is suggested by Scrum as small enough to remain workable and large enough to deliver significant work

LEARNING IN SPRINT MODE:

STEP TWO

A Scrum Based Team Assignment

Your Team meets for a planning session.

During this session, decide what tasks will need to be done to: (1) understand your concept (reading in your text, research) and the Nearpod lesson creation platform (videos, tutorials); (2) teach your concept through Nearpod (by creating a film posted to YouTube or Tik Tok; through Google slides or Microsoft PowerPoint slides; by using activities in Nearpod); and (3) create the practical application of your concept and present in Nearpod. These tasks are related to the Product Backlog from the Product Owner.

Also appoint a Scrum Master (similar to a Team Captain). Even through the Scrum Master organizes the group, they are still a working member of the team.

Scrum Master responsibilities include: keeping track of the Scrum Board which is the visual board that keeps tabs on the work of the group, helping to make assignments, coordinating the Sprints.

LEARNING IN SPRINT MODE:

STEP THREE

A Scrum Based Team Assignment

Set up a Scrum Board (task board).

A sticky note app like LucidSpark* works well for this.

The board should have the following categories:
To Do → In Progress → Done.

Using the Scrum Board add all your tasks to the board that will accomplish your goals for the project.

The Scrum Master is responsible for updating the board by moving sticky notes (tasks) from one category to the next, but all Team members should have access to the Scrum Board.

*A link for video information about LucidSpark is here:
https://www.youtube.com/watch?v=J_mRVT0nC0M

LEARNING IN SPRINT MODE:

STEP FOUR

A Scrum Based Team Assignment

To accomplish the project goals, you will be conducting a Scrum "Sprint" as a team.

The Sprint is a short, focused period of time (in this project, one week) where a team works together to complete specific tasks/project goals.

As a team, you will decide what tasks will go into each interval of the Sprint, and who will be assigned each task.

During the Sprint, the team will meet (either in person, by Zoom/Teams, by phone, etc.) for 15 minutes each day of the week-long Sprint—these quick meetings are called "daily standups".

During these meetings, team members discuss what they've accomplished and what tasks remain.

LEARNING IN SPRINT MODE:

STEP FIVE

A Scrum Based Team Assignment

Using the platform Nearpod, you should include the following elements in your lesson:

A visual/interactive way to explain the concept
(video posted to YouTube; PPs, slides, activities)

A quiz that your fellow students can take to understand and test their knowledge of the concept

Demonstration of the practical aspect of the concept:

Apply the Knowledge Management Cycle concept to describing elements of a "Survival Guide for College Freshmen"
(focusing on your institution);

Identify and collect knowledge for the Freshman Guide
(brainstorm with your team on what this information would be and how you would gather it);

Make that knowledge accessible by organizing it into themes/topics
(what categories will you have in your guide?);

Suggest a way to **Store** the knowledge so its easily reachable
(QR Code or something similar);

Suggest a way to **Manage** knowledge so it stays current
(method of updating); and

Suggest a way to **Disseminate** knowledge of the guide by sharing with target audience (Tik Tok, Instagram)

Finalize your Nearpod Lesson by generating a self-paced code that may be shared with your instructor and classmates.

LEARNING IN SPRINT MODE:

STEP SIX

A Scrum Based Team Assignment

Following the submission of the deliverable, your Scrum Team can review how it went (known as the Sprint Retrospective) either through a survey your instructor provides for you or a final Sprint standup meeting. If reviewed through a meeting, you and your Team should discuss:

What went well during the sprint?

What didn't go well?

What challenges did we face?

What would we change in the next Scrum/Sprint project?

LEARNING IN SPRINT MODE:

USE OF ARTIFICIAL INTELLIGENCE

A Scrum Based Team Assignment

For this exercise you may use AI (Chat GPT, CoPilot) to generate ideas to accomplish your tasks.

However, these ideas must be discussed during the daily standups and the Scrum Team should agree about which ideas make sense for accomplishing project goals.

Also consider what would be most engaging and add value to the deliverables.

LEARNING IN SPRINT MODE

A Scrum Based Team Assignment

Knowledge Management Cycle

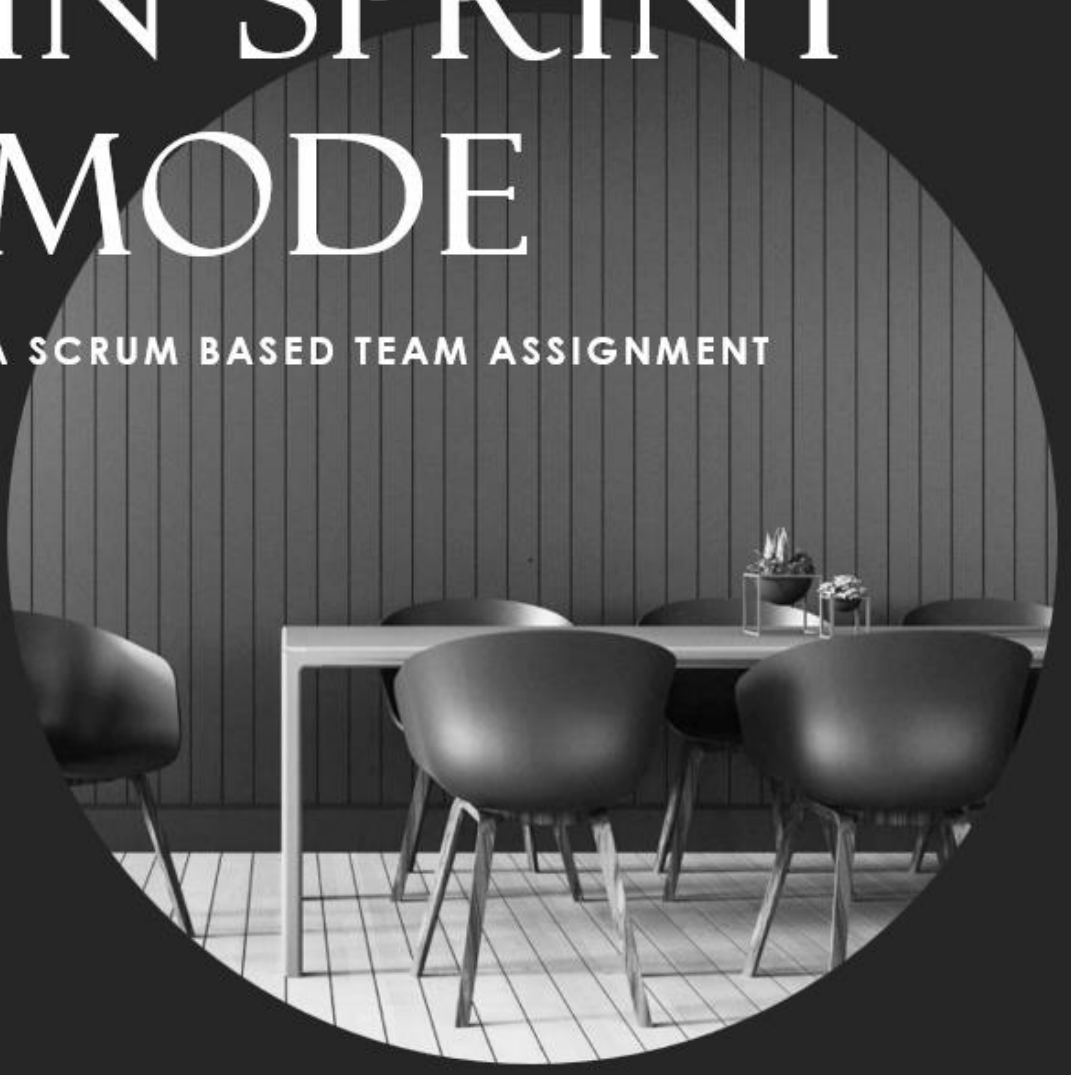
Create knowledge
Capture knowledge – Identify & collect
Refine knowledge – Placed in context & made usable
Store knowledge – Stored so accessible
Manage knowledge – Kept current, relevant, & accurate
Disseminate knowledge – Available in useful format

The print worksheet for the exercise follows on the next few pages. Additionally, the PowerPoint Slides used to create the Nearpod Lesson may be accessed through the following link:

https://docs.google.com/presentation/d/179cM6khnqwzoEF9zSp5KB8wEkCi6pghq/edit?usp=sharing&ouid=111446225659093796650&rtpof=true&sd=true

LEARNING IN SPRINT MODE

A SCRUM BASED TEAM ASSIGNMENT



Introduction
This assignment uses a dimension of the Agile mindset known as Scrum. During this exercise you will focus on understanding a concept, teaching that concept, and creating a practical application of that concept. This exercise depends on teamwork, innovation, and problem-solving. See a video about Scrum at this link: https://www.youtube.com/watch?v=2Vt7Ik8Ublw

Concept
Your concept for this exercise is the MIS "Knowledge Management Cycle". See a video about this concept and its importance for business at this link: https://www.youtube.com/watch?v=k3jo7oWzUUc

Practical Application
Your practical application of the concept for this exercise is to create a "Survival Guide for College Freshmen" that could be used at your institution.

Platform
We will be using the teaching platform "Nearpod" which is located at www. Nearpod.com. Here is a video link for your Team to learn more about Nearpod: https://www.youtube.com/watch?v=EZcLQHiNY3U&t=64s

You may also consider familiarizing yourself with the Scrum process which is the basis of this exercise. More information on Scrum may be found in The Scrum Guide at: https://www.scrum.org/resources/scrum-guide .

Process

Step One: Organize your team (4-5 students) and receive the product backlog. The product backlog is the dynamic, prioritized list of all the work that needs to be completed for the product. You will receive the product backlog from your instructor, who is the Product Owner for this exercise

The product backlog for this project is:
- Understand the MIS Concept and Scrum
- Understand how to use Nearpod as a teaching tool
- Set up a Scrum Board to track the Team's Sprint
- Develop a teaching lesson in Nearpod for your Team's concept
- Develop a plan to apply your concept in the practical application of a College Survival Guide for Freshmen that could be used at your institution

Step Two: Your Team meets for a planning session. During this session, decide what tasks will need to be done to (1) understand your concept (reading in your text, research) and the Nearpod lesson creation platform (videos, tutorials); (2) teach your concept through Nearpod (by creating a film posted to YouTube or Tik Tok; through Google slides or Microsoft PowerPoint slides; by using activities in Nearpod); and (3) create the practical application of your concept and present in Nearpod. Also appoint a Scrum Master. Even through the Scrum Master organizes the group, they are still a working member of the team. Scrum Master responsibilities will include: keeping track of the Scrum Board which is the visual board that keeps tabs on the work of the group, helping to make assignments, coordinating the Sprints.

Step Three: Set up a Scrum Board (task board). A sticky note app like LucidSpark works well for this. The board should have the following categories: **To Do → In Progress → Done.** Using the **Scrum Board** add all your tasks to the board that will accomplish your goals for the project. The Scrum Master is responsible for updating the board by moving sticky notes (tasks) from one category to the next, but all Team members should have access to the Scrum Board.

Step Four: To accomplish the project goals, you will be conducting a Scrum "Sprint" as a team. The Sprint is a short, focused period of time (in this project, one week) where a team works together to complete specific tasks/project goals. As a team, you will decide what tasks will go into each interval of the Sprint, and who will be assigned each task. During the Sprint, the team will meet (either in person, by Zoom/Teams, by phone, etc.) for 15 minutes each day of the week-long Sprint—these quick meetings

are called "daily standups". During these meetings, team members discuss what they've accomplished and what tasks remain.

Step Five: Using the platform Nearpod, you should include the following elements in your lesson:

- A visual/interactive way to explain the concept (video posted to YouTube; slides, activities);
- A quiz that your fellow students can take to understand and test their knowledge of the concept;
- Demonstration of the practical aspect of the concept; in this case apply the Knowledge Management Cycle concept to describing elements of a "Survival Guide for College Freshmen" (focusing on your institution) and plan a way to accomplish the following : **Identify** and collect knowledge for the Freshman Guide (brainstorm with your team on what this information would be and how you would gather it); **Make** that knowledge accessible by organizing it into themes/topics (what categories will you have in your guide?); suggest a way to **Store** the knowledge so its easily reachable (QR Code or something similar); suggest a way to **Manage** knowledge so it stays current (method of updating); suggest a way to **Disseminate** knowledge of the guide by sharing with target audience (Tik Tok, Instagram).
- Finalize your Nearpod Lesson by generating a self-paced code that may be shared with your instructor and classmates.

Step Six: Following the submission of the deliverables, your Scrum Team can review how it went (known as the Sprint Retrospective) either through a survey your instructor provides for you or a final Sprint standup meeting. If reviewed through a meeting, you and your team should discuss: What went well during the sprint? What didn't go well? What challenges did we face? What would we change in the next Scrum/Sprint project?

For this exercise you may use AI (Chat GPT, CoPilot) to generate ideas to accomplish your tasks. These ideas, however, must be discussed during the daily standups and the Scrum Team should agree about which ideas make sense for accomplishing project goals. Also consider what would be most engaging and add value to the deliverables.