

Empowering Tomorrow's Information Technology Professionals: Bridging Competencies and Personalized Learning through "Topics in Tech"

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Abstract— This innovative practice full paper in competencies development describes how Topics in Tech, a weekly speaker series featuring university alumni and information technology leaders, enables current students to connect with alumni and technology leaders, gaining insights into career milestones, ongoing projects, and college experiences. Topics in Tech is a key component of BentleyPlus, an innovative program grounded in self-observation theory that enhances students' engagement and learning experiences both inside and outside of the classroom. BentleyPlus integrates essential skills identified by top employers, aligning extracurricular activities with professional growth under advisor guidance and emphasizing self-reflection and introspection.

Exposure to networking opportunities and career insights encourages students to apply self-observation techniques, fostering deeper self-awareness and metacognitive skills aligned with the principles of self-observation theory. Students participating in "Topics in Tech" engage in reflective practices, assessing their reactions and takeaways from each session. This reflective learning approach enriches students' educational experiences and empowers them to make informed decisions about their educational and professional paths. The combination of BentleyPlus and self-observation theory within "Topics in Tech" contributes to holistic student development, preparing them for success in the dynamic and competitive information technology industry by cultivating essential competencies valued by employers.

Survey results gathered from more than 1200 students during a five-semester period suggest that because of their participation in Topics in Tech, a majority felt connected or benefitted significantly from their chosen speaker's experiences, recognized the importance of analyzing information before making decisions, and had a high degree of engagement with the content either during the session or afterward, in discussions with their peers. These results indicate that Topics in Tech effectively meets the goals of the university's BentleyPlus program, fostering identity awareness, critical thinking, and interpersonal skills among the participants.

Keywords—*personalized learning, competency development, self-authorship, career readiness, technology professionals*

I. INTRODUCTION

In today's competitive job market, the demand for graduates skilled in essential competencies such as professionalism and work ethic, leadership, and intercultural fluency is higher than ever. However, studies indicate a significant gap between the perceived proficiency of college graduates and the expectations of employers in these areas [1], [2].

These recent studies by the National Association of Colleges and Employers (NACE) surveyed both graduating college seniors and employers and found that less than half of college graduates are proficient in professionalism/work ethic, leadership, and global/intercultural fluency (among other competencies). Furthermore, college graduates perceived their proficiency in these competencies to be much higher than their employers did.

While college students spend much of their time completing academic coursework and attending classes, a critical component of their undergraduate experience involves learning outside of the classroom. These experiences provide invaluable opportunities to see how alumni are applying topics and skills in their careers that students are learning in the classroom. By bridging the gap between classroom learning and practical application, students can gain a deeper understanding of the competencies that their future employers may seek. Furthermore, inviting guest speakers who can share their professional journeys can inspire students and offer tangible examples of how classroom concepts translate into successful careers. A goal of Topics in Tech is to expose students to various careers as technology professionals, so they might say "This could be me in five or ten years!" or equally as valuable, realize that they do not see themselves following a similar career path as the speaker.

This paper contributes to the literature on competency-based learning through extracurricular experiences by presenting Topics in Tech, an innovative career-readiness program which offers students an opportunity to interact with technology professionals, while developing their own cognitive, intrapersonal, and interpersonal competencies. Participating in extracurricular learning activities allows students to develop skills and strengths that complement classroom learning, preparing them for both academic and professional success. Topics in Tech bridges students' academics and extracurriculars to help students recognize the relevancy of their coursework and ensure a holistic education.

A. BentleyPlus

BentleyPlus[3], introduced in 2022, is the university's competency-based program that equips students with the tools and resources to be strategic about how to maximize their learning during their undergraduate experience. With foundations in self-authorship theory [4], [5], [6], and guided by the AACU Value Rubrics and Essential Learning Outcomes [7], [8], BentleyPlus integrates key competencies with effective pedagogical strategies to facilitate impactful personalized learning experiences. Students who enroll in BentleyPlus select from eleven competencies that top employers have named essential to their success. These are broadly categorized under the focus areas of Develop, Think, and Act, as shown in Fig. 1.

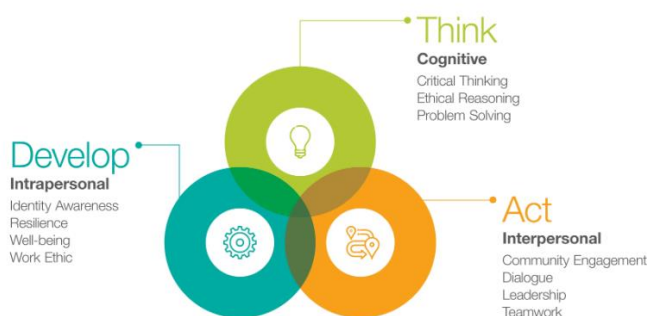


Fig. 1. BentleyPlus Focus Areas.

Think is the cognitive domain which encompasses critical thinking and problem solving, and ethical reasoning. In the intrapersonal domain, Develop includes identity awareness, resilience, well-being, and work ethic, while Act includes opportunities for community engagement, dialogue, leadership, and teamwork. These are defined as follows[3]:

1) Think

- Ethical Reasoning - The capacity to make values-based decisions.
- Critical Thinking - The capacity to objectively analyze information before making a decision.
- Problem Solving - The capacity to design and implement a plan to address an identified need.

2) Act

- Community Engagement - The process of making a positive impact in communities.

- Leadership - The practice of developing others' strengths, demonstrating empathy and emotional intelligence, and delegating work to advance common goals.
- Teamwork - The practice of building collaborative relationships and managing group conflict while working toward common goals.

3) Develop

- Identity Awareness - The ability to enact an understanding of how components of social identity impact the experiences of self and others.
- Resilience - The ability to utilize skills and strategies to anticipate, navigate and overcome challenges and failures.
- Well-being - The ability to practice balance within dimensions of well-being and cultivate habits of self-care.
- Work Ethic - The ability to reliably follow through on commitments.
- Dialogue - The practice of collaboratively listening to, sharing, and discussing different perspectives and experiences with others in face-to-face interactions to facilitate deeper understanding.

As an extracurricular initiative, the university's Office of Student Affairs oversees the BentleyPlus program. Advisors help students recognize how the extracurricular activities they are involved in will help them grow as individuals and as future professionals. The program prioritizes critical thinking, communication, collaboration, creativity, and cultural competency, mirroring essential skills sought after in today's rapidly evolving career landscape.

Students enrolled in BentleyPlus select three competencies as their personal focus areas, and they attend approved campus events which emphasize those focus areas. Campus partners can apply to have their events as "approved" for BentleyPlus by demonstrating how they enable students to develop specific competencies. Fig. 2 shows the competencies that participants selected during the latest academic year.

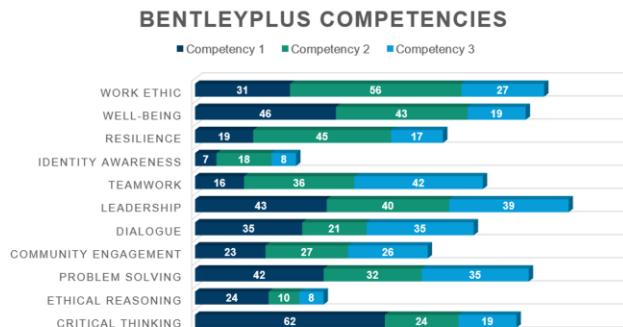


Fig. 2. Students' Selected Competencies for Personal Development

Work-ethic and leadership have the largest number of students, which is consistent with the focus on career

development and entrepreneurship found at a business university. A review of competencies from Fig. 2 shows that among computer information systems majors, leadership, dialogue, problem solving, and resilience are their top competencies, followed by well-being, teamwork, work ethic, and critical thinking.

Approximately 7% of the undergraduate student body participates in BentleyPlus, as shown in TABLE I. which provides the breakdown by major, gender, and class year. This enrollment also demonstrates the interdisciplinary appeal of the program.

TABLE I. UNDERGRADUATE BENTLEYPLUS ENROLLMENT BY CLASS YEAR AND MAJOR

Class Year	2024		2025		2026		2027	
Major	M	F	M	F	M	F	M	F
Accountancy			2	2	2	1		
Actuarial Science						1	1	
Business Admin				1				
Business Analytics			1	1				
Business Economics	1	3	1	1		2		
Corp. Acctg/Finance	1	1		4	3			1
Computer Information Systems	1	1	1	1				
Creative Industries				1				1
Data Analytics				1	3	1		1
Economics/Finance	3		2	4	4	1		
Finance	3	4	11	5	8	3		
Information Design						1		
Info Sys and Acctg			1		1			
Management			1	4		3		
Marketing	4	4	1	6		5		
Professional Sales	1		1					
Public Policy				1				
Quant. Economics					1			
Undecided A&S					1	2	1	2
Undecided Bus.	1				8	16	71	62
Totals by Gender	17	16	22	32	31	36	73	66
Totals by ClassYear	33		54		67		139	

Most first-year students have not yet selected their academic majors, which explains the large values for students with undecided arts and sciences or business majors.

B. Topics in Tech

Topics in Tech[9] is one of the approved participating BentleyPlus initiatives. In this weekly speaker series arranged by the university's Computer Information Systems learning center, alumni who are information technology professionals join with other industry leaders to collectively demonstrate the vast range of career opportunities available as information technology professionals. Speakers often share key milestones in their careers, current projects, and valuable experiences gained during their time in college. Topics in Tech originally began during the pandemic year as an online- only program, it but expanded to include both in-person and online presentations. Topics in Tech is open to all students, and in 2022, attending at least one Topics in Tech presentation became a requirement for all students enrolled in CS 100, a required introductory information technology course taken during the first or second semester of their first year at the university. Each semester offers ten to twelve speakers and students sign up for the session(s) of

interest to them, enabling a personalized learning experience outside the classroom.

A goal of Topics in Tech is to expose students to the breadth of career options available to information technology professionals. Notable speakers have included small business entrepreneurs, alumni employed in various at technology companies such as Snapchat, Amazon, Google, Microsoft, Meta, and Uber; a data analytics manager at a major social media company, the project leader overseeing the streaming of a recent Super Bowl on Fox television, the chief information officer of a local major league baseball team, and the inventor of the world's first electronic spreadsheet. Presentations are recorded and archived online [9]. Students choose the talks that align with their interests, assuring that each event fosters personal impact and empowers students to make connections between their coursework and their future goals.

As an approved BentleyPlus program, Topics in Tech focuses on the competencies of work ethic, identity awareness, critical thinking, problem solving, and dialogue. Students are exposed to a variety of career paths and professional journeys of speakers, and they learn first-hand what it takes to succeed in technology-related career. By listening to the experiences and perspectives that the speakers share, students begin to consider aspects of business or technology related career or course of study that are of interest to them. Finally, as the presenters share their own anecdotes about personal and professional challenges and the importance of considering options, students appreciate the critical thinking skills necessary for success as IT professionals. By engaging actively during Topics in Tech presentations by asking questions, taking notes, or sharing their impressions in the form of a key take-away, or by writing reflection essays or informally debriefing with other participants or classmates afterward, Topics in Tech provides opportunities that promote dialogue and communication, crucial skills for future professional interactions.

C. Guiding Research Questions

This study analyzes combined survey responses and reflections of Topics in Tech participants for four semesters beginning in Fall 2022, when Topics in Tech was certified as a BentleyPlus approved offering by the university. The paper will discuss the following guiding research questions:

- RQ1. How does participating in Topics in Tech influence students' perceptions of career opportunities as future business and information technology professionals?
- RQ2: What is the impact of Topics in Tech on students' development of competencies such as work ethic, identity awareness, critical thinking, problem solving, and dialogue, as assessed through survey responses and reflection essays?

II. LITERATURE REVIEW

BentleyPlus has its foundations in competency-based learning, self-authorship theories, and reflective learning. These frameworks are widely used in higher education for preparing students for future success as the literature review shows.

A. Competency-Based Learning in Higher Education

With many institutions of higher education focusing on employability after graduation, programs such as BentleyPlus and Topics in Tech offer avenues for students to develop core competencies for future success. “At the forefront [are] the development of knowledge, skills and attitudes that will equip students with the competencies necessary to succeed in the workplace [10, p. 6033].”

The integration of technology in into competency-based education has been the focus of recent research. Tools such as MCQGen [11] support competency-based learning by providing personalized and formative assessments, providing learners and instructors with ongoing feedback on learners’ performance, prioritizing learners’ needs, and aiming to optimize the learning process.

B. Self-Authorship

The BentleyPlus program is based on the model of self-authorship, defined as “the internal capacity to define one’s beliefs, identity, and social relations”[4, p. 269]. “As individuals work toward self-authorship, they begin to listen to and cultivate their own thinking and voices. They develop the capacity to define for themselves how they will live, think, and behave; they also develop the capacity to make meaning at complex levels as they integrate thoughts/beliefs, relationships, and identity. [12, p. 2].” Self-authorship has gained in popularity in recent years as a developmental capacity that helps meet the challenges of adult life. It involves individuals taking ownership of their beliefs and decisions, moving away from external influences and taking responsibility for their own values and identity. Self-authorship requires individuals to engage in critical reflection, interpreting the varying perspectives they hear to create and act on their own visions to lead successful lives [4], [6], [12], [13], [14]. The self-authorship model aligns with self-regulation and self-directed models of classroom pedagogy, marking the importance of student meaning making in all educational spaces. [15] consider the process of self-regulation in learning, noting, “Self-regulation is depicted as a cyclic process involving three stages: 1) goal setting, 2) monitoring processes and strategies, 3) self-evaluation [15, p. 4].” Integrating BentleyPlus, Topics in Tech, and pedagogy such as self-regulation provides students with multiple opportunities to gain skills that will serve them throughout their careers.

In addition to the BentleyPlus program, universities have implemented the self-authorship model in their first-year seminar or other programs. [13] describes a first-year seminar program promoted to facilitate self-authorship. Students read several novels to experience how their characters developed a sense of identity. A debate in the course would assist students in sharing their voices, performing research, critical thinking, and presentation skills. A study at Baylor University [16] draws on previous work in self-authorship [6], [13] to examine the relationship between self-authorship and several competencies and values, and found that self-efficacy, civic engagement, and problem solving ability were significant predictors of self-authorship

C. Reflective Learning

John Dewey was one of the first researchers to define a significant connection between deliberate reflection and active personal learning[17]. Later, educators built upon his philosophical work. As [18] states, “The body-brain recognizes patterns and suggests ‘best solutions’ based on what has worked before. If we react quickly, we act on limited information, biases or beliefs, or generic popular practices.” Therefore, reflecting on learning allows a student to construct new patterns, make meaning, and understand external and internal influences that limit perspectives and foster self-responsibility for one’s own learning. Furthermore, salient attention (the stimuli or information that stands out to the learner) is most likely to lead to meaningful learning. A salient event and the experience of that event often leads to reflection.

Reflection converts experience into learning, and reflection is essential in meaning making. Meaningful learning involves questioning and analyzing assumptions, beliefs, and values, and this reflection results in new understanding of experiences that can inform future experiences. To make meaningful and self-directed learning, students must reflect on a learning experience and their progress, and they must adjust strategies as needed to attain desired outcomes in the future. “Reflection-in-action” may also occur when learners encounter situations that are not common to their experiences[19]. These situations give the opportunity to reflect on their practice in three ways that ordinary circumstances do not: appreciation, action, and reappraisal. This process influences meaning making over time.

III. METHODOLOGY

Topics in Tech introduces current students to information technology professionals and demonstrates the wide range of career possibilities available to Computer Information Systems (CIS) majors and minors.

A. Participants and Format

A cohort of 1767 first-year students attended Topics in Tech presentations during the four fall and spring semesters beginning September 2022, and completed the attendance survey after each event. Bentley is a business-focused university where all students are enrolled in a minor in business administration, and choose their major(s) or minor(s) later in their college careers. The format the Topics in Tech program (students select topics of interest, attend the sessions, complete a survey, write a reflection paper) remained constant since the program’s inception. Only the speakers, and whether they present in person or online, varied from semester to semester.

B. Participant Survey

Students sign up for and attend the sessions of interest to them, and at the end of each Topics in Tech presentation, complete a short survey in which they reflect on the competencies they discovered at each presentation. See Fig. 4. Responses to questions 1, 2, and 3 are offered using a 5-point Likert scale with responses: *Extremely*, *Very Much*, *Somewhat*, *Slightly*, *Not at all*.

TOPICS IN TECH PARTICIPANT SURVEY

Please complete this survey for Topics in Tech attendance and provide your reflection on this presentation. All responses will be anonymized if this data is shared.

- Name
- Which course/section are you enrolled?
- Are you enrolled in BentleyPlus? (*Yes, No, Never heard of it, Not yet, but I plan to*)
- Which presentation are you attending?

BentleyPlus supports opportunities to develop competencies that are essential to your success. Consider how your attendance and participation today might relate to the competencies listed in each of the three focus areas: Think, Develop, Act.

1. Think: Critical Thinking, Problem Solving

I learned about the importance of analyzing information before making decisions.

2. Develop: Identity Awareness, Resilience, Work Ethic

I could identify with the speaker's experiences, or learned commitments, or better consider other points of view.

3. Act: Dialogue, Leadership

I was able to ask a question, comment in chat, take notes, or actively listen, or later may talk with friends or classmates about what I learned in this presentation.

4. Key Take-Away

Please share in one sentence a key take-away from this speaker's presentation that you found valuable in your professional or personal life.

Fig. 3. Survey Instrument.

Any incomplete surveys were removed. Because most students were in their first year and attended Topics in Tech as a requirement of their CS 100 course, all responses were considered as one large data set. After some basic demographic questions, the first three survey questions are tied to a BentleyPlus focus area, and the last asks students to reflect on the presentation in the context of their own experience or goals.

C. Reflection Essay

Each student also completes a short reflection assignment on the Topics in Tech presentations they attended, where they reflect on their relationship with the topic, and the speaker's experiences, as described in Fig. 4.

Each question in the reflection assignment aligns with a different BentleyPlus focus area. Question 2 invites students to reflect on their own work ethic and priorities, in line with the "Act" focus area. Question 3 about "analyzing information" aligns with the "Think" focus area of BentleyPlus and assesses students' understanding of critical thinking after the presentation. Question 4 on "identifying with the speaker's experience and challenges" aligns with "Act," focusing on goal-setting and interpersonal skills, and Question 5 on what the speaker said that "made an impact on you," aligns with the

"Develop" focus area, requiring the student to reflect on their own personal growth and identify what was most personally meaningful.

TOPICS IN TECH REFLECTION ASSIGNMENT

Sign up for and attend a Topics in Tech session of your choice. Write a report (maximum one page / 500 words) in which you discuss:

1. Who is the speaker? What do/did they do?
2. Could you see yourself doing the kind of work that they do in the future? Why or why not?
3. How did this presentation help you think about analyzing information before making decisions?
4. In what way could you identify with the speaker's experiences or challenges?
5. What one thing from the speaker's presentation that you remember the most, or that made impact on you?

Include a photo or screenshot (if attending on zoom) of yourself at the event. Submit your report to your instructor within one week of the presentation that you attended.

Fig. 4. Topics in Tech reflection assignment for CS 100.

The reflection questions effectively support the development of competencies within all three BentleyPlus focus areas. By encouraging students to engage with the presented information on multiple levels, the questions promote learning across multiple BentleyPlus dimensions.

IV. RESULTS

This section presents results from the survey, an analysis of key-takeaways, and shares some reflections from students' essays to evaluate Topics in Tech and student learning.

A. Evaluating BentleyPlus

To evaluate the significance of Topics in Tech within the context of competency development in the BentleyPlus program, according to the office of student affairs, for the 2023-2024 academic year, 54% of first-year students, 21% of second-year students, 15% of third-year students, and 10% of fourth-year students are enrolled in BentleyPlus. Exposure to the BentleyPlus.

These results are consistent with survey data obtained after Topics in Tech was included as a BentleyPlus option.

BentleyPlus student ambassadors from the university's newly revised First-Year Discovery Seminar promoted BentleyPlus, and the requirement to attend at least one Topics in Tech as part of CS100 may contribute to the current increase in participation among the newest cohort of first-year students.

B. Analysis of Survey Data

For each of the Topics in Tech focus areas surveyed, the majority of students during the four-semester period very much or extremely agreed with each of the following survey statements:

1. Think: *I learned about the importance of analyzing information before making decisions.*
2. Develop: *I could identify with the speaker's experiences, or learned commitments, or better consider other points of view.*
3. Act: *I was able to ask a question, comment in chat, take notes, or actively listen, or later may talk with friends or classmates about what I learned in this presentation.*

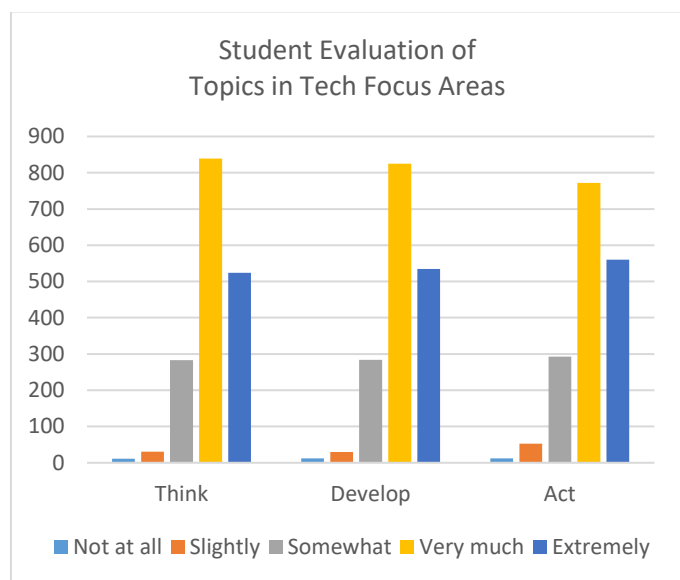


Fig. 5. Student Evaluation of Topics in Tech Focus Areas

Evaluating these results with respect to RQ1, it is worthy to note that high responses in "Very much" and "Extremely" categories for the Think question suggest that Topics in Tech presentations positively impact students' understanding of critical thinking and problem solving, and their importance in decision making. Strong agreement (in "Very much" and "Extremely" categories) with the Develop question suggests that students were able to identify with the speakers' stories, both as alumni and as business and technology professionals. Hearing the speaker's personal experiences gives students new insights as they consider their own future major in college and possible career goals.

Finally, strong agreement (in "Very much" and "Extremely" categories) with the Act question suggest that students found the presentations to be of interest and were able to participate during the talk, or share their impressions with others casually afterward, or during a follow-up discussion in class.

As related to RQ2, strong agreement (in "Very much" and "Extremely" categories) across all competency questions indicate a strong positive impact of Topics in Tech on students' competencies related to critical thinking, identity awareness, and active engagement (dialogue).

Figure 6 shows a word cloud analysis of all responses to the survey question "Please share in one sentence a key take-away from this speaker's presentation that you found valuable in your professional or personal life." shows common themes across all

years of the Topic in Tech program. Popular stop words (never, now, still, etc.) were removed. The authors assigned one of the three BentleyPlus categories (Think, Act, Develop) to the sixty most-frequently appearing words that remained, to better understand how students encountered the BentleyPlus focus areas throughout the Topics in Tech program. While categorization can be subjective, and some words might arguably belong to more than one category, the authors based their category assignments on general meanings of the words as they apply to the BentleyPlus program.

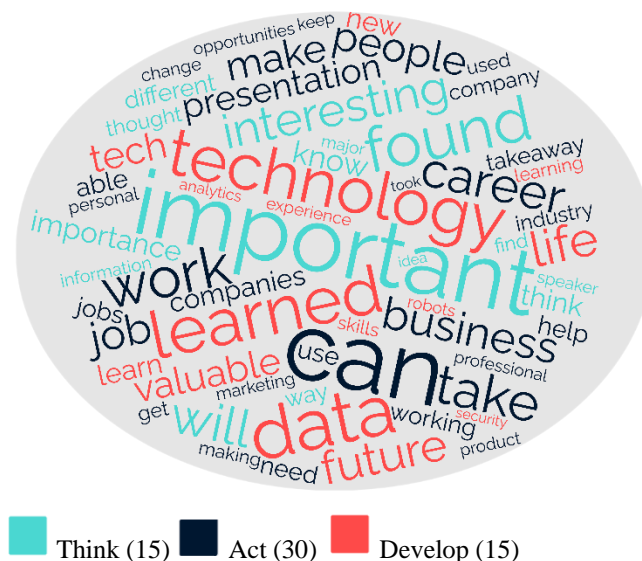


Fig. 6. Categorized Word Cloud of Key Topics in Tech Takeaways. Number show how many words were in each theme.

For the Think focus area, the most common words are important, think, interesting, know, will, find, different, and idea. These words emphasize the processes of critical thinking, problem solving, learning and engagement. In the Act focus area, words such career, business, job, and work suggest the career-oriented nature of these students. Finally, the prominence of tech/technology, data, learn/learned, with valuable, life, and future, in the Develop focus area highlight students' needs to develop skills that will benefit them throughout their lives.

C. Examples of Student Reflection Essays

Students responded to the reflection questions in Fig. 4 as a way to apply what they learned from the speakers' experiences to their own lives. Rather than ask them to summarize what the speakers said, the reflection essays require them to consider how the speakers' experiences are relevant to them (if at all). Students identified with speakers' presentations differently, sometimes seeing themselves in the roles that the speakers took on and other times realizing that the speakers' careers were not for them.

One student reflected on a presentation by an alum named Brian, who shared his experience as the project leader responsible for streaming a recent Superbowl game that aired on a major television network:

I could not see myself doing the work that [Brian] does because I'm not as passionate about coding and engineering as I am about finance. This presentation helped me think about analyzing information in a broad view at first, and then narrowing down to the finer details and work that must be done. For example, ... streaming the Superbowl [had] to be ... simple, scalable, and stable. He then would have to home in on what must happen for each of those things to occur. For the program to be scalable, teams ran multiple simulations to see how much traffic the servers could handle for example. I could identify with [his] challenges in that with your work, you may need to prepare far ahead of time and make many tweaks and changes to be successful.

Another student attended a presentation by an alum, Marc, a management consultant. He reported that "Despite not seeing myself doing what Marc does, the presentation made me reflect on analyzing information before making decisions. For example, the speaker mentioned that each person has a specific buying behavior. ... if the company considers the information from customer insights, they can make the best decisions in accordance with their customers., I applied this to my life, in which it is necessary to get feedback from others to improve for next time."

When Andrew heard a presentation by a director at a data security firm, he commented, "I could definitely see myself doing the kind of work they do, as I am studying Data Analytics, which requires similar skills and interests as people working in Data Security. Both require strong technical skills and an interest in working with data, as well as using informational technology for business decisions."

In each case these students extracted the "take home message" from the details and applied lessons learned to their own lives. By responding to the reflection questions guided by the BentleyPlus competencies, students gained a deeper understanding of career exploration and decision making, communication and interpersonal skills, and the need for lifelong learning, networking, and goal setting to make informed decisions as they navigate their own future career paths.

V. DISCUSSION

Students participating in Topics in Tech engage in reflective practices, assessing their reactions and takeaways from each session. This reflective learning approach enriches students' educational experiences and empowers them to make informed decisions about their educational and professional paths. The combination of BentleyPlus and self-observation theory within Topics in Tech contributes to holistic student development, preparing them for success in the dynamic and competitive information technology industry by cultivating essential competencies valued by employers and bridging the skill gap that often exists between classroom instruction and extracurriculars.

A limitation of this study is that most students participating are in their first year and are likely to be business majors. While beyond the scope of the presented work, the impact of the Topics in Tech program could be evaluated further if implemented

across different disciplines and tested with a more varied population.

Through their participation in Topics in Tech, students learn the importance of professional networking, begin to see future career possibilities, and recognize the tangible impacts they will develop for a lifetime of professional and personal success. In addition, by utilizing the BentleyPlus program, Topics in Tech stimulates students' development of skills in educational awareness, identity awareness, resilience, critical thinking, leadership, and dialogue. After each speaker's talk, students participate in an introspective practice by completing a survey crafted to spark higher-order thinking. This reflection not only enhances comprehension but also cultivates metacognitive skills, empowering students to become more effective and adaptable learners.

REFERENCES

- [1] "Competencies: Employers Weigh Importance Versus New Grad Proficiency." Default. Accessed: May 10, 2024. [Online]. Available: <https://naceweb.org/career-readiness/competencies/0e85bf8f-10d9-400c-a942-16b073521981>
- [2] "First Destinations for the College Class of 2018." Accessed: May 10, 2024. [Online]. Available: <https://www.naceweb.org/job-market/graduate-outcomes/first-destination/class-of-2018>
- [3] "BentleyPlus | Bentley University." Accessed: May 12, 2024. [Online]. Available: <https://www.bentley.edu/university-life/bentleyplus>
- [4] M. B. Baxter Magolda, "Three Elements of Self-Authorship," *J. Coll. Stud. Dev.*, vol. 49, no. 4, pp. 269–284, 2008.
- [5] M. B. B. Magolda, "Self-Authorship: The Foundation for Twenty-First-Century Education," *New Dir. Teach. Learn.*, 2007, doi: 10.1002/tl.266.
- [6] M. B. B. Magolda, "Self-Authorship as the Common Goal of 21st-Century Education," in *Learning Partnerships*, Routledge, 2004.
- [7] "VALUE Rubrics," AAC&U. Accessed: Jul. 27, 2023. [Online]. Available: <https://www.aacu.org/initiatives/value-initiative/value-rubrics>
- [8] "Essential Learning Outcomes," AAC&U. Accessed: May 12, 2024. [Online]. Available: <https://www.aacu.org/trending-topics/essential-learning-outcomes>
- [9] "Spring 2024 Topics in Tech – CIS Sandbox." Accessed: May 12, 2024. [Online]. Available: <https://cissandbox.bentley.edu/sandbox/index.php/2024/01/31/spring-2024-topics-in-tech/>
- [10] F. Watts, L. E. Aznar-Mas, T. Penttilä, L. Kairisto-Mertanen, C. Stange, and H. Helker, "INNOVATION COMPETENCY DEVELOPMENT AND ASSESSMENT IN HIGHER EDUCATION," *INTED2013 Proc.*, pp. 6033–6041, 2013.
- [11] C. N. Hang, C. Wei Tan, and P.-D. Yu, "MCQGen: A Large Language Model-Driven MCQ Generator for Personalized Learning," *IEEE Access*, vol. 12, pp. 102261–102273, 2024, doi: 10.1109/ACCESS.2024.3420709.
- [12] T. M. Gocial and J. Fussell, "Structuring a First-Year Seminar to Facilitate Self-Authorship: Developing a Shared Understanding of Self".
- [13] "Kegan's Stages of Adult Development: Self-Authoring Knowers," @ThinkCollab. Accessed: May 09, 2024. [Online]. Available: <https://www.thinkingcollaborative.com/stj/kegan-s-stages-of-adult-development%3A-self-authoring-knowers>
- [14] P. M. King and K. S. Kitchener, *Developing reflective judgment: understanding and promoting intellectual growth and critical thinking in adolescents and adults*, 1st ed. in Jossey-Bass higher and adult education series. San Francisco: Jossey-Bass Publishers, 1994. Accessed: May 13, 2024. [Online]. Available: <http://catdir.loc.gov/catdir/toc/onix07/93043164.html>
- [15] J. Beishuizen and K. Steffens, "A Conceptual Framework for Research on Self-Regulated Learning," 2011, pp. 3–19. doi: 10.1007/978-94-6091-654-0_1.

- [16] R. Abouras, "Authoring an Undivided Self: Predictors of Self-Authorship Among First-Year Students Attending Christian Universities," 2021.
- [17] J. Dewey, *How we think*. Boston: D.C. Heath & Co., 1910.
- [18] P. Faller, H. Lundgren, and V. Marsick, "Overview: Why and How Does Reflection Matter in Workplace Learning?," *Adv. Dev. Hum. Resour.*, vol. 22, no. 3, pp. 248–263, Aug. 2020, doi: 10.1177/1523422320927295.
- [19] "What is Reflection-In-Action? A Phenomenological Account - Yanow - 2009 - Journal of Management Studies - Wiley Online Library." Accessed: May 20, 2024. [Online]. Available: <https://doi.org/10.1111/j.1467-6486.2009.00859.x>