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GreenLab Startup Weekend at Palm Institute - Incubating Student Startups in Ghana

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Abstract

This paper describes the Palm GreenLab and its first GreenLab Startup Weekend to encourage and support entrepreneurial student teams. Palm Institute is a 10-year-old liberal arts university-college in Ghana, whose mission is to educate ethical and excellent leaders in Africa. The Palm GreenLab is an innovation and incubation lab that seeks to "unearth and support talents that solve wicked problems with creative ideas, and to nurture and scale the growth of ambitious entrepreneurial projects". The GreenLab plans to provide an array of offerings and support for student entrepreneurship. In Fall 2022, the GreenLab ran its first Startup Weekend - a two day intensive experience in which students pitched and evaluated ideas, formed teams, worked to identify and address important elements and issues, and presented their project. This paper briefly describes the current and planned structure of the Palm GreenLab; describes the Startup Weekend; reports results from participant reflections; and outlines lessons learned and future directions. Projects included agricultural products, education software, and election software. During the weekend, participants completed a Strength - Improvement - Insight (SII) reflection. Strengths focused on teamwork and collaboration, entrepreneurial thinking, and creativity and problem solving. Improvements focused on teamwork issues and the food provided. Insights focused on the value and challenges of teamwork.

1. Introduction

Palm Institute is a private liberal arts university college located at Shai Hills in Accra, Ghana. The mission of Palm is to produce educated ethical and excellent leaders in Africa. Palm was founded in 2012 and opened in September 2014 with six students, four staff, and six faculty. Palm is accredited by the Ghana Tertiary Education Commission (GTEC) and affiliated to the University of Cape Coast, Ghana. Palm offers BSc degree programs in Business Information Technology, Computer Science, and Business Administration. Palm has a liberal arts core curriculum that ensures that students are equipped with knowledge from other disciplines in addition to the programs they have been enrolled in. Palm's programs are designed with industry leaders' feedback and comments to ensure that graduates fit into Ghanaian industry and compete locally and globally. Palm has small classes to ensure every student gets the required attention they deserve from faculty.

The Palm GreenLab seeks to provide an array of offerings and support for student entrepreneurship, including co-curricular workshops and special events. In Fall 2022, the GreenLab ran its first Startup Weekend - a two day intensive experience in which students pitched and evaluated ideas, formed teams, worked to identify and address important elements and issues for their project, and presented their project to a panel of judges. The main goals were to generate student interest and enthusiasm in entrepreneurship, and to help students appreciate the knowledge, skills, and attitudes needed by entrepreneurs (to provide context for their courses and other GreenLab events). Thus, the event incorporated elements from the TechStars Startup Weekend and the Business Model Canvas (described below).

This paper is organized as follows. Section 2 reviews relevant background. Section 3 briefly describes the Green Lab, and its Startup Weekend. Section 4 describes student outcomes, including projects, data from student reflections, key challenges, and lessons learned. Section 5 presents conclusions and some future directions.

2. Background

2.1. Context in Ghana & Africa

Author Peter Carlos Okantey, Palm's Founder and President, grew up in Ghana and obtained higher education in the US. He identified three themes that could transform Ghana and the rest of Africa: selfless leadership, a spirit of investment in society, and higher education. To create greater opportunities for higher education in Ghana, he founded the Naa Amerley Palm Education (NAPE) Foundation (named after his deceased mother), a US 501(c)(3) non-profit organization, and Palm Institute, a four-year university college that focus on the liberal arts, critical thinking, quality and ethical leadership [1]. The NAPE Foundation is governed by a small board of trustees with industry backgrounds. Peter started with $50, and over the past 18 years has raised close to $2 million to purchase 57 acres of land and construct the first phase of the Palm Institute campus in Manya Jorpanya outside of Tema, an industrial city in Ghana..

Palm's mission is to produce educated ethical and excellent leaders with integrity for corporate, national, and continental creativity, innovation, service, and sustainability. The Palm leadership decided that an Honour System would support this mission and build community trust. The Honour System means that Palm faculty, staff, and students are expected to work with honesty and integrity, and pledge to do the right thing even when no one is looking [2], [3].

2.2. Techstars Startup Weekend

The Techstars Startup Weekend is a three-day program "where aspiring entrepreneurs can experience startup life", and has been used for over 7,000 programs that have been run in over 150 countries for over 400,000 participants [4], [5]. Typically, on a Friday evening participants arrive and check in, meet other participants, have dinner, review the agenda, pitch ideas, form teams around the most popular ideas, and start work. On Saturday they continue work, with occasional check-ins, status reports, and meals. On Sunday they finish their work; prepare, practice, and deliver their pitch presentations; and receive feedback and awards from judges.

Author Clif Kussmaul attended Startup Weekends in the US, and found them exciting, fun, and informative. He noted how most teams had members with diverse backgrounds and levels of experience, but nearly everyone actively contributed to a project. As a college professor, he encouraged students to participate, and was impressed by the event's impact on students as they worked on "real" projects with "real" people. This experience suggested that similar events, even on a smaller scale, could be effective.

2.3. Business Model Canvas

As shown in Figure 1, the Business Model Canvas (BMC) graphically shows key elements of a business plan [6], [7]. Value propositions are centered; partners, suppliers, activities, resources, and cost structures are on the left; and customer segments, relationships,

Figure 1: The Business Model Canvas

Key Partners & Suppliers	Key Activities	Value Propositions	Customer Relationships	Customer Segments
	Key Resources		Customer Channels	
Cost Structure			Revenue Streams	

channels, and revenue streams are on the right. The BMC often includes guiding questions for each element, and space for writing or sticky notes to capture ideas. The BMC encourages entrepreneurs to consider all of these elements and how they might be interconnected.

3. The Palm Institute GreenLab

The GreenLab is Palm's "innovation and incubation lab, designed to unearth and support talents that solve wicked problems with creative ideas, and to nurture and scale the growth of ambitious entrepreneurial projects" [8]. Wicked problems have "many interdependent factors making them seem impossible to solve" [9] and often involve social policy issues such as education and health care [10]. The GreenLab seeks to provide an array of offerings and support for student entrepreneurship, including:

- Standalone workshops on topics related to innovation and entrepreneurship (see below).
- Multi-day intensive events, such as a startup weekend (see below) or a project "sprint" where each student team can focus intensively on their project.
- Other structures (e.g., a Stage Gate model [11], [12], [13]) to guide and support students, teams, and projects as they evolve over months or years, recognizing that most projects will not become viable ventures, but that people often learn more from failure.
- Resources (e.g., materials, equipment, space, consulting).

3.1. Workshops

The GreenLab offers a variety of co-curricular workshops to help students learn about and develop skills related to creativity, innovation, and entrepreneurship. The following workshops occurred prior to the Startup Weekend.

Author Eugene Eluerkeh led a workshop to introduce students to the Design Thinking Methodology, a five phase iterative and non-linear approach to tackling problems that are ill-defined or poorly understood [14], [15]. The workshop's purpose was to stimulate a mindset of seeing problems as opportunities to create solutions. Participants formed teams and created word maps of problems they encounter in their communities. Using affinity mapping, they voted and selected a problem each and worked through the process of unpacking the problem, empathizing with proxy users and coming up with potential solutions.
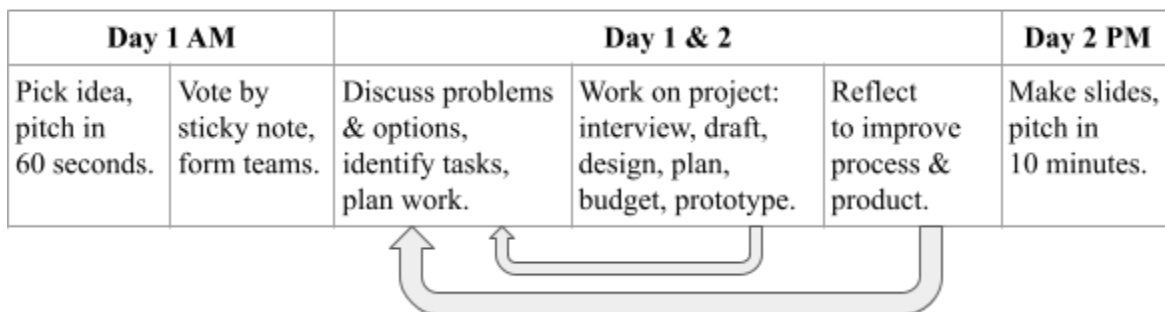
Author Oscar Rodriguez led workshops on Problem Solving Using Agile Methodologies [16], Rapid Prototyping [17], Proxy User Testing [18], and Intro to Blockchain Technology and NFTs. In these sessions, students were challenged to solve problems utilizing critical thinking, clearly defining the problem and identifying the most effective and unique solutions. Students were given an opportunity to present an elevator pitch of their prototypes applying the techniques learned as well as create an NFT. The classroom voted on the best prototype.

3.2. The GreenLab Startup Weekend

The GreenLab Startup Weekend was a two-day event inspired by but scaled down from the Techstars model described above [4], [5]. It was part of Palm's 10th anniversary celebration, which included a variety of events for students, faculty and staff, and other stakeholders. Most of the sessions were organized and led by authors Clif Kussmaul, Eugene Eleurkeh, and Oscar Rodriguez; the other authors, and other faculty and staff also served as team coaches and judges. The event was only open to Palm students, and all who applied were accepted. The demographics of the 28 participants include:

- 20 freshman and 8 sophomore students.
- 11 female and 17 male.
- 26 were 18-25 years old, and 2 were 30-32 years old
- 8 from Northern Ghana and the rest from the Central, Eastern, Volta, and Greater Accra regions of Ghana.
- 21 on 100% tuition and accommodation scholarships, 5 on 100% tuition scholarships, and 2 on 80% tuition scholarships.

Figure 3: Weekend Development Process

Day 1 AM		Day 1 & 2			Day 2 PM
Pick idea, pitch in 60 seconds.	Vote by sticky note, form teams.	Discuss problems & options, identify tasks, plan work.	Work on project: interview, draft, design, plan, budget, prototype.	Reflect to improve process & product.	Make slides, pitch in 10 minutes.

The event began with an ice-breaker, a welcome from Palm's president, introduction of the facilitators and coaches, and an overview of the process (Figure 3) and schedule (Table 1). Figure 3 shows the high level process, with arrows to highlight the importance of continual reflection and feedback during the event. Table 1 shows a more detailed final schedule. The icebreakers helped to generate energy and highlight the importance of teamwork and communication. Each day included a session for reflection and debriefing.

The pitch process was adapted from the Techstars process. Students listened to a sample pitch, and had ten minutes to think, make notes for their concept, write their name and concept on a poster-size paper, and practice their 60 second pitch with a neighbor. Nearly every student pitched an idea. Students and coaches then spent 10-15 minutes walking around the room and

annotating the concepts with sticky notes that described strengths, concerns, and suggestions. The coaches gradually removed the concepts with the fewest sticky notes and the least interest, and encouraged students to form teams around the remaining concepts.

For teamwork session #1, teams were asked to focus on the root problem to be solved, consider and evaluate multiple solutions, and identify, prioritize, and assign tasks

Table 1: Startup Weekend Schedule

Day 1	Day 2
9:00 Ice breaker #1	9:00 Ice breaker #3
9:30 Opening remarks	9:30 Opening remarks
10:00 Pitch ideas, form teams	10:00 Teamwork #3
11:00 Ice breaker #2	1:00 Lunch
11:30 Teamwork #1	1:45 Final pitches
1:00 Lunch	3:00 Reflection & debrief
1:45 Teamwork #2	3:30 Closing remarks
3:30 Reflection & debrief	4:00 Finish
3:45 Closing remarks	
4:00 Finish	

for the weekend. For teamwork session #2, teams were introduced to the Business Model Canvas [6] and encouraged to consider each of its main elements in their work. For teamwork session #3, teams were strongly encouraged to follow Guy Kawasaki's 10-20-30 Rule for venture capital presentations [19] (10 slides, no more than 20 minutes, and no less than 30 point fonts) and to practice their presentation at least twice before pitching to the coaches.

4. Results

Figure 4 contains photos from the event. Top left: an icebreaker; bottom left and top right: students working on projects; bottom right: students meeting with a coach.

Figure 4: Photos from GreenLab Startup Weekend

The participants formed 6 teams, each with 3-5 members. Their business concepts included:

- Sale and delivery of liquid propane gas (LPG) in nearby communities.
- Shea butter products produced by underemployed young women.
- Tomato and soya bean products to reduce spoilage and increase local employment.
- A website to sell clothing and other goods produced in Africa.
- Software to help school children learn reading, writing, and arithmetic.
- An electronic voting system to encourage citizen participation and community development.

4.1. SII Analysis

At the end of each day, all participants (students and leaders) were asked to complete an anonymous Strengths-Improvements-Insights (SII) evaluation [20], where they reflected on their experience and wrote out their thoughts in three categories (listed on one presentation slide):
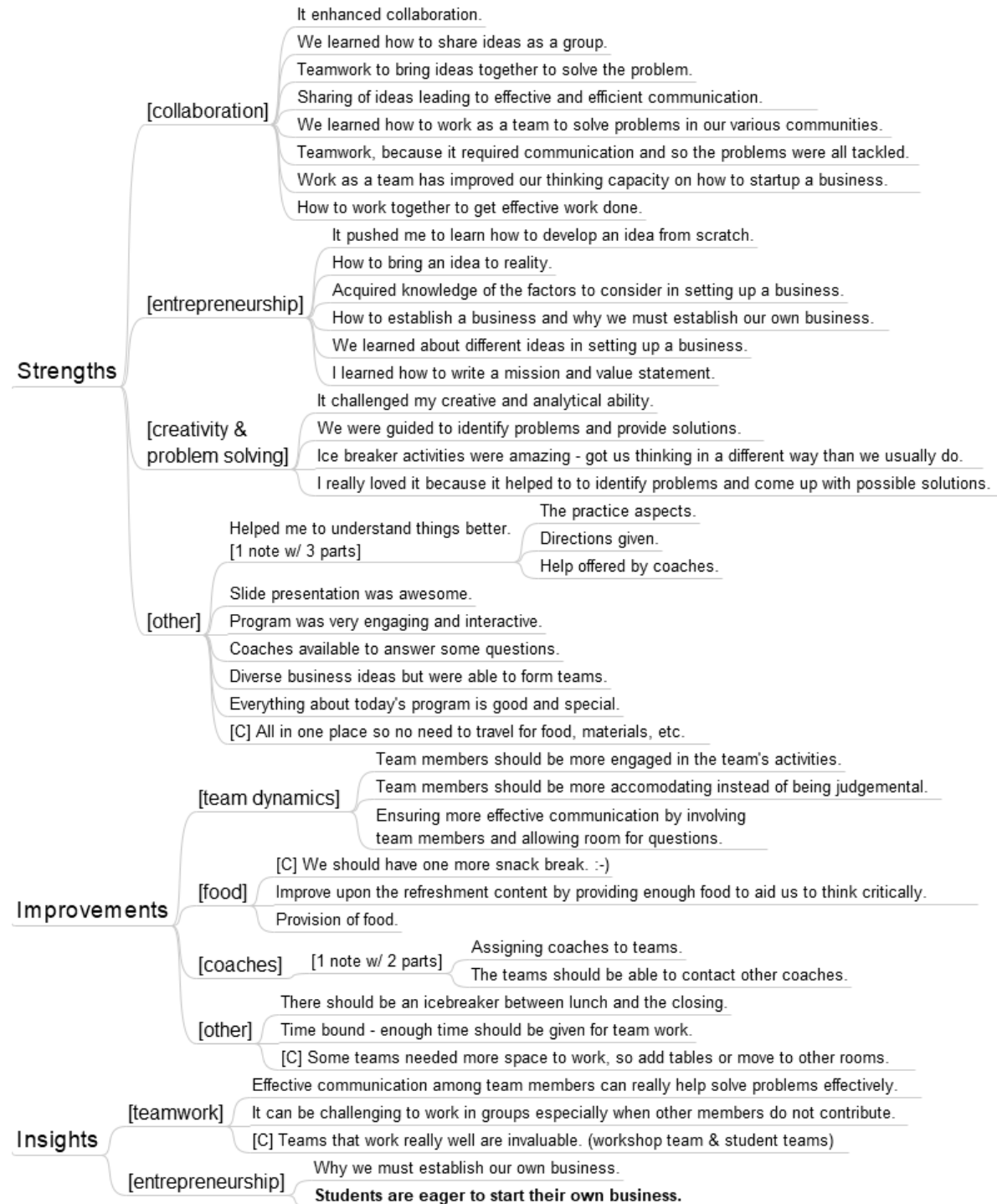
- Strengths: What was good, and why?
- Improvements: What could be better, and how?
- Insights: What have we learned, and why is it important?

Participants wrote each strength, improvement, or insight they identified on a separate sticky note, and then stuck their notes on poster paper at the back of the room. The sticky notes enabled participants to visually group similar ideas. (In other contexts, an SII could use an online form or a printed page with space for each of the three categories.) Author Clif Kussmaul collected the ideas and transcribed them into the open-source mind-mapping program FreePlane [21]. He grouped similar ideas together to identify key themes, producing the mind map shown in Figure 5, where items from coaches are marked with [C].

As shown in the top half of the figure, participants identified numerous areas of strengths, which most often focused on teamwork and collaboration, entrepreneurial thinking, and creativity and problem solving. One participant wrote: "Everything about today's program is good and special. I really love it because it helped to identify problems and come up with possible solutions". Participant insights were similar to strengths, and focused on the value and challenges of teamwork and entrepreneurship. This suggests that the event met the goals to generate student interest and enthusiasm, and to help them appreciate the knowledge, skills, and attitudes needed for entrepreneurship.

Participants identified fewer areas for improvements. Some focused on teamwork issues, which suggests that perhaps coaches should monitor teams more closely and intervene more quickly. Participants also mentioned food - on the first day there were issues in the campus kitchen that were resolved on the second day.

Figure 5: Mind Map of Strengths, Improvements, & Insights

Strengths

[collaboration]
- It enhanced collaboration.
- We learned how to share ideas as a group.
- Teamwork to bring ideas together to solve the problem.
- Sharing of ideas leading to effective and efficient communication.
- We learned how to work as a team to solve problems in our various communities.
- Teamwork, because it required communication and so the problems were all tackled.
- Work as a team has improved our thinking capacity on how to startup a business.
- How to work together to get effective work done.

[entrepreneurship]
- It pushed me to learn how to develop an idea from scratch.
- How to bring an idea to reality.
- Acquired knowledge of the factors to consider in setting up a business.
- How to establish a business and why we must establish our own business.
- We learned about different ideas in setting up a business.
- I learned how to write a mission and value statement.

[creativity & problem solving]
- It challenged my creative and analytical ability.
- We were guided to identify problems and provide solutions.
- Ice breaker activities were amazing - got us thinking in a different way than we usually do.
- I really loved it because it helped to to identify problems and come up with possible solutions.

[other]
- Helped me to understand things better. [1 note w/ 3 parts]
  - The practice aspects.
  - Directions given.
  - Help offered by coaches.
- Slide presentation was awesome.
- Program was very engaging and interactive.
- Coaches available to answer some questions.
- Diverse business ideas but were able to form teams.
- Everything about today's program is good and special.
- [C] All in one place so no need to travel for food, materials, etc.

Improvements

[team dynamics]
- Team members should be more engaged in the team's activities.
- Team members should be more accomodating instead of being judgemental.
- Ensuring more effective communication by involving team members and allowing room for questions.

[food]
- [C] We should have one more snack break. :-)
- Improve upon the refreshment content by providing enough food to aid us to think critically.
- Provision of food.

[coaches] [1 note w/ 2 parts]
- Assigning coaches to teams.
- The teams should be able to contact other coaches.

[other]
- There should be an icebreaker between lunch and the closing.
- Time bound - enough time should be given for team work.
- [C] Some teams needed more space to work, so add tables or move to other rooms.

Insights

[teamwork]
- Effective communication among team members can really help solve problems effectively.
- It can be challenging to work in groups especially when other members do not contribute.
- [C] Teams that work really well are invaluable. (workshop team & student teams)

[entrepreneurship]
- Why we must establish our own business.
- **Students are eager to start their own business.**

4.2. Leader & Coach Concerns

The Startup Weekend leaders and coaches identified additional areas for improvement, centered on the Business Model Canvas, presentations, and student attitudes and behavior.

In general, teams did not make effective use of the Business Model Canvas. They misinterpreted some parts (e.g., by listing team members as partners), skipped other parts, or included too much content from it in their presentations. This is likely because most of the students lacked related background knowledge, and the brief introduction was insufficient. We could invest more time helping students to understand and apply the BMC, perhaps in a separate workshop so it doesn't take too much time from the Weekend. We could also omit the BMC or mention it only briefly, and allow teams to decide whether to use it based on their own prior experience.

The teams devoted time and energy to their presentations, and often included images or animations, but there were also issues (typical of novice presentations) that would not be difficult to correct. For example, most presentations had slides with text that was too small to read, although there was often ample space to use a larger font. Some students tried to read all of the text on each slide, and several teams ran out of time, suggesting that they hadn't practiced carefully enough. Given the students' inexperience and limited time, we could provide and enforce a template, or require student teams to practice their presentation with a coach.

Another concern was the attitude and seriousness of some students. While nearly all students were enthusiastic and worked steadily throughout the event, at times some students were inconsiderate or disrespectful of each other, particularly during the Q&A parts of their presentations. In the future, we might offer modest prizes for the best projects, and/or penalties for inappropriate behavior. We might also adopt a "code of conduct" [22]–[24] for the Startup Weekend or Palm Institute more broadly.

5. Conclusions

This paper has described the Palm Institute GreenLab and some of its offerings, including its first GreenLab Startup Weekend. We have described the motivation, structure, things that worked well, and things that could be improved. As noted above, the TechStars Startup Weekend has been widely successful, and our scaled down model could easily be adapted in other settings. (We would be happy to share slides and handouts on request.)

This was the first GreenLab Startup Weekend, and everything was new. The initial set of projects do not really address "wicked problems", but we hope future projects will be more ambitious. Over time, more student participants will have experience (in courses and GreenLab events) so the level of work and seriousness should increase over time. When half of the students are in their third or fourth year at Palm, and have participated in multiple teams and Startup Weekends, teamwork, projects, and presentations should be quite different. Quality & professionalism should also increase as the stakes increase, e.g., when students see this as a way to get real support or course credit for a project.

This paper is an experience report, not a report of a controlled research study. The projects and SII analysis are based on less than 30 students, two thirds of whom were in their first semester of

college. Thus, they have less academic and non-academic experience, and they might be reluctant to share honest, critical feedback, even anonymously.

We are excited to explore some future directions. We plan to run the Startup Weekend for students once or even twice each year, and study how behaviors and outcomes change as the event structure. We hope to run similar events for prospective students, either on campus or in other parts of Ghana. We might even partner with other institutions to organize larger, public events using the Techstars model. We plan to expand the set of co-curricular workshops so students have more opportunities to develop entrepreneurial knowledge, skills, and attitudes, and become better prepared for startup weekends and other projects.

We are developing a Stage Gate model (e.g., [11], [12], [13]) for Palm Institute to guide and support student projects across the four years of undergraduate education. Project concepts might originate in informal conversations, courses, or co-curricular workshops. Projects might develop through early stages during a startup weekend or as course assignments or projects. Promising projects might develop as independent study courses, or capstone projects, and be supported with equipment, materials, space, or other resources.

Acknowledgements

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