

Developing and Assessing Elevator Pitches in Capstone Design

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1. Introduction

Byers et al. suggest that entrepreneurship leads to innovation, which leads to technological advances, which in turn leads to both an enhanced quality of life and the economic benefit of job creation. Students who receive entrepreneurship training are better prepared to be effective team members and work toward solving global problems [1]. One facet of this training is to create and deliver an effective elevator pitch.

In this paper, we utilize one of the e-learning modules developed through the Kern Entrepreneurial Engineering Network (KEEN) and provided by the University of New Haven (UNH), a KEEN partner institution. KEEN promotes engineering education by fostering an entrepreneurial mindset in students: "... beginning with curiosity about our changing world, integrating information from various resources to gain insight, and identifying unexpected opportunities to create value. An engineer equipped with an entrepreneurial mindset is able to create extraordinary value within any type of organization. KEEN schools identify, nurture, and develop entrepreneurially minded engineers who will contribute to our national economic prosperity and secure individual fulfillment through a lifetime of meaningful work." (engineeringunleashed.com)

The UNH KEEN modules are intended to be integrated into engineering and computer science classes at all undergraduate levels. They consist of independent work done via online lessons that include video and readings, along with reflective exercises and quizzes.

At the University of Cincinnati, we deployed the module on developing an elevator pitch in a senior capstone design course. The online module consists of four lessons. The first two lessons introduce the concepts of stakeholders and value propositions, while the latter two introduce developing a pitch and recovering from a failed pitch. We split the four lessons into two halves, two to be completed at the beginning of the semester and the remaining two at the end. The rationale for doing so is that students collect voice-of-customer data at the beginning of the semester to help inform their project proposals and then to evaluate alternate designs around midterm. The first two lessons help the students to broaden their ideas about who their stakeholders could be and to think beyond the technical aspects of the project to address the potential value of the project. At the end of term, they produce an elevator pitch video and conduct a technical design review (TDR). The final lesson about responding to a failed pitch can help students move forward using the critiques from their TDR and video pitch.

The contributions of this paper include (1) illustration of active learning exercises developed for team-based, in-class activities to support the online content, and (2) development of a rubric to assess the elevator pitch. A survey of rubrics and synthesis of our rubric are given. We discuss experiences deploying the module and in-class activities, the impact on student learning, and results of applying the elevator pitch rubric. We offer several ideas for enhancing delivery of the activities based on our experiences.

2. Overview of the KEEN Elevator Pitch Modules

The University of New Haven offers a series of online, independent learning modules [2] covering such topics as

- thinking creatively to drive innovation
- applying systems thinking to complex problems, and
- adapting a business to a changing climate.

The elevator pitch module includes 4 lessons with corresponding learning outcomes, shown in Figure 2.1. Prior to starting the lessons, students self-assess their confidence level with 9 statements related to oral communication and persuasive speaking. After completing the module, students re-assess themselves with the same questions and reflect on changes in their attitudes and perceptions. An example question is

I know I can identify the different groups with an interest in a product.

The students select a response (mostly, partially, or not at all) for each statement.

Figure 2.1 Lessons and Learning Outcomes [2]

1. Stakeholders and Their Needs: Identify the value proposition of a product or service from the point of view of a variety of stakeholders.

2. Criteria for a Successful Pitch: Articulate the criteria that yield an effective pitch.

3. Developing Elevator Pitches: Outline a process for developing elevator pitches.

4. Persisting through Failure: Implement strategies for recovering from an unsuccessful pitch experience.

The lessons provide an introduction to terminology and concepts associated with elevator pitches. The lessons include opportunities to read about case studies, watch videos, and perform guided reflection on both successful and unsuccessful elevator pitches. The topics in the lessons include:

- identifying stakeholders,
- talking to a non-technical audience,
- creating a value proposition,
- advocating for exigence,
- constructing a pitch,

- critiquing a pitch,
- and recovering from a bad pitch experience.

A short online quiz is given at the end of each lesson. The intermediate quizzes are not scored for credit, but the final comprehensive quiz is scored. The entire module, including quizzes, is deployed as a Blackboard learning module that can be seamlessly integrated into a course on Blackboard (other learning management system platforms are available as well.)

At the University of Cincinnati in the Electrical Engineering and Computing Systems Department, Electrical and Computer Engineering seniors take a 2-semester senior design course. We give an elevator pitch assignment at the end of the fall term; each team creates a video of their pitch. Previously, to prepare students, we provided some basic guidance about oral presentations and an outline of requirements for an elevator pitch (see Rubric 4 in Figure 4.4). The KEEN elevator pitch module provides comprehensive training in developing an elevator pitch targeted to engineering students. We enthusiastically incorporated this module into our course in Fall 2016. We had 69 students working in 20 teams. Each student completed the module independently. We developed discussion-based team activities for active learning in the classroom (presented in Section 3). To assess the elevator pitches, we developed a rubric synthesized from features found in 12 rubrics for elevator pitches/oral communication publically available on the internet. A discussion of the candidate rubrics is given in Section 4, followed by our proposed rubric in Section 5. Results of applying the rubric and conclusions are offered in Section 6.

3. In-class Activities

In order to reinforce concepts from the KEEN elevator pitch module, our first in-class activity was to re-watch Timothy Prestero's TED talk video on failed and successful inventions [3] together and then discuss the steps to developing a value proposition. These steps are (1) identifying stakeholders, (2) identifying the problem to be solved for each stakeholder, (3) determining the specific contribution or need fulfilled for that stakeholder, and (4) comparing the proposed solution to other existing options. We created the chart shown in Figure 3.1 to be completed by each team in class. This activity served as a warm-up before starting preparation for each team's individual pitch. At this point, communication between team members is at a beginning level, as is use of the terminology and concepts necessary for creating a value proposition. Volunteers from different teams shared their answers after a few minutes of team-based discussion and completion of the worksheet.

Create Value Propositions: Firefly Phototherapy Device					
	manufacturer	clinic director	parent		
problem to be solved for the stakeholder					
specific contribution: need fulfilled by the product or service					
comparison to existing solutions or other options					

Figure 3.1 Initial In-class Activity

The second activity focused on the team's pre-preparation for an elevator pitch. At this early point in the term, the teams were clarifying their project topics and initiating collection of voice-of-customer data. They were not yet ready for developing a full pitch, and they had not yet completed the second half of the KEEN elevator pitch module. The learning objective of this activity was to use elevator pitch terminology and capture preliminary ideas that would lead to an elevator pitch at the end of the term. Teams began by discussing an "argument for exigence," or identifying an urgent need to be met by the project. The project was then described in non-technical terms, an outcome which is sometimes difficult for engineering students to master. In this exercise, they had to explain the project to themselves and then to their nearby classmates. This is an intermediate-level oral communication activity since it involves expressing concepts that may be clear in the mind of the speaker but which require some reflection to express them to an audience unfamiliar with the specific project topic. The teams then developed a value proposition and reflected on what they would ask for in their pitch. The worksheet is given in Figure 3.2.

	Outlining Your Pitch			
argument for				
exigence				
non-technical				
description				
value				
proposition				
a a la face avec a f				
ask/request				

Figure 3.2 Brainstorming for Elevator Pitch Preparation

Our experience with the activities is that the students were not as prepared to participate in discussions as we would have expected. In the future, a review of the terminology and concepts from the online lessons should be conducted by the professors in class, followed by discussion of a worked example to illustrate expectations for what they should be able to do with respect to their own project.

4. Survey of Online Elevator Pitch Rubrics

An online search using the term "elevator pitch rubric" yielded many results. The rubrics considered here are a representative sample where each has some distinctive and useful features that can be synthesized into an elevator pitch rubric that aligns both with the KEEN elevator pitch module and expectations for an engineering senior design project video. The rubrics are numbered and the institution or author (where known) are listed in Table 1. The URLs for the rubrics are included as well. Hereafter, the rubrics are referred to by the number given in the leftmost column.

number	institution and URL
1	Santa Ana Unified School District
	www.sausd.us/cms/lib5/CA01000471/Centricity/Domain/494/ElevatorOK_14.pd
	f
2	University of Cincinnati Business
	https://business.uc.edu/content/dam/business/centers/enterpreneurship/docs/2016
	docs/Elevator%20Pitch%20Evaluation%20Sheet.pdf
3	author: jabowen
	http://www.rcampus.com/rubricshowc.cfm?code=W5CCX7&sp=true
4	University of Cincinnati EECS
	created by the authors, used in previous academic terms
5	VentureWell (previously National Collegiate Inventors and Innovators Alliance)
	http://nciia.org/sites/default/files/u7/suhr.pdf
6	Wichita State University
	http://webs.wichita.edu/depttools/depttoolsmemberfiles/ace/ACE%20Epitch%20
	Score%20Sheet.pdf
7	University of Wisconsin–Platteville
	https://www.uwplatt.edu/files/entrepreneurship/Elevator%20Pitch_Guidelines%2
	0&%20Rubric.pdf
8	Baker College Business Connection
	http://guides.baker.edu/BCBC/elevatorpitch
9	Project Lead the Way
	https://ltlatnd.wordpress.com/2015/12/15/elevator-pitches/
10	TES Resources. For teachers, by teachers.
	https://driftlessregioninnovationevent.wikispaces.com/file/view/Elevator+Pitch+2
	011.doc
11	University of Northern Colorado
	http://mcb.unco.edu/Events/networkingnight/ElevatorPitch/
12	AAC&U VALUE Rubric for Oral Communication
	https://www.aacu.org/value/rubrics/oral-communication

Each rubric is discussed in a figure below. The figures are annotated with markup such as gold stars (indicating a new idea to be considered for incorporation into the synthesized rubric), red lines (ideas that are not suitable for our assignment and will not be further considered), and light blue pop-up comments that indicate observations about the rubric. A text box below each rubric summarizes the applicability of the rubric for our synthesis effort.

In terms of topicality, Rubrics 1-5 are the most relevant. None are suitable as is; they all have text that could be leveraged, but the categories could be combined and rewritten. Rubrics 6-8 are topical but do not include sufficient (if any) descriptive text of how to apply the categories for evaluation. The remaining ones, Rubrics 9-12, are less specific to an elevator pitch (as developed in the KEEN elevator pitch module) and more focused on aspects of delivery. Each rubric contributed in some way to the synthesized rubric given in Section 5.

Figure 4.1 Rubric 1



3

Figure 4.2 Rubric 2

	Elevator Pitch Evaluation Sh	eet				
		5	4	3	2	1
	Time	1:30 - 2:00	1:20-1:30, 2:00-2:10	1:10-1:20, 2:10-2:20	1:00-1:10, 2:20-2:30	< 1:00, > 2:30
\searrow	Overall Presentation	Polished, poised,	Well-rehearsed, and	Slight nervousness or	Moderate nervousness	Pronounced
<i>·</i>		and captivating.	interesting with few to	uncertainty,	or uncertainty,	nervousness and
		add de	livery s. Used	presentation	significant logic gaps in	uncertainty with
		visual area	ial aids,	somewhat confusing,	presentation. Used low	serious logic gaps in
		catego	nes	fair visual aids	quality visual aids.	presentation. Used
						very low quality visual
		Dealth and the stifts of	Dealth and the stifts of the	Dealth and the stifts of the	Dealth and the inter-	aids,
ど	Pain/problem	Problem identified	Problem identified is	Problem identified is	Problem being	I nere is no problem
		is serious and not	serious and could be	significant and current	addressed is minor and	small target
		need/op	portunity	adoquato. Sharod by	vory adoquato. Sharod	Sinai target.
		Very la	large market	moderately sized	by a small target	
			ange market.	target market.	by a small target.	
\checkmark	Premise/product/plan	Solution to problem	Solution is significantly	Solution is interesting,	Solution is not very	Solution has not novel
		is amazing, game	better than existing	and has some	novel and only	and has no competitive
		changing, or game	alternatives.	adequate benefits over	marginally different	advantage in the
		creating.		existing alternatives.	from existing	market place
٨					alternatives.	
$\overline{\boldsymbol{\lambda}}$	People/Team	These are the only	This team has	This is a great team for	This team has multiple	This team will be
		people to do this!	advantages that would	this idea, but some	issues such as gaps in	unable to realize this
			be difficult to duplicate	others could do as	experience and	idea
				well, or this team lacks	expertise	
				one or more critical		
\checkmark		Delieveble me		pieces	Teensminede	No. man of sub-standards
\sim	Proof/Credibility	tocture COr	nbine with	convenience type	opinions, research you	that this idea will work
		working proto Dec	nle/team	unsubstantiated	doubt or don't boliovo	that this fueld will work
		working proto pet	oncent	testimonials	doubt of doin t believe	
	Purpose/Profit Potential	Huge profit	Idea seems like it could	This idea could be	This idea could provide	This idea could not
	. a.p. se, i one i otentiai	potential; tempted	be a big winner in the	successful and lead to	partial income for the	provide an income for
		to invest own	marketplace	a growing company or	team members	the team members, or
		money		highly successful		will not provide a
				lifestyle business		profit at all

• consider leveraging the text with some rewrites

Figure 4.3 Rubric 3

Elevator Pitch Enter rubric description					
	Poor 0 pts	Fair 35 pts	Good 90 pts	Great 100 pts	
Intro/Hook	Poor	Fair	Good	Great	
You just started in with info or forgot your name. c h u ir g		You said your name and there is some attempt to create an intro, but I am not hooked. There was nothing unique or creative about the intro, or it was hokey or gimmicky.	You used a sentence to introduce yourself in a way that showed some relevance and there was some creativity and it was memorable in some way.	OMG! I'm hooked!!! You were honest, but used a twist and now I want to know more.	
Aspirations/Goals 15 % Enter description	Poor I get no sense of what you want to do with your art.	Fair Your aspirations are either too narrow or not relevant	Good Grandma can understand your goals and so can I.	Great Your goals immediately seem important to me too.	
		to most audiences.	They are mostly relevant. They seem to make sense for you.		
Because/Why 30 % Enter description	Poor	Fair	Good	Great	
You made no attempt to tell I get me why your goals matter you to anyone but you. matt muc what		I get some sense of who you are and why your art matters to you, but not much understanding about what it does for others.	You have told me what what your art will do with, through or for others.	You have told me what what your art will do with, through or for others AND it immediately seems important to me	
Realistic 15 % Are your goals	Poor	Fair	Good	Great	
realistic?	You are going to bring world peace to millions while evidence for suitability to address goals and achieve success		I think you have mostly realistic expectations, but you have not presented me with any evidene that you are so much better suited to reach your goals than the next person.	I'm impressed, but think if anyone can do it, you can, and that you are realistic in the difficulty and complexity of the challenge	
Closing/Invitation 10 % Is there a way to		Fair	Good	Great	
continue this conversation?	You forgot to ask me for anything.	You asked me for a business card, but it seemed less than compelling.	You offered a card (the best way to get one) and invited me to continue. Perhaps you asked for my advice too	You invited me to continue our conversation and I want to continue because you left me with a next question.	
Grammar/Clarity 10 % and Organization! Is	Poor	Fair	Good	Great	
this the best way to say this?	Huh? I can't understand what you are saying.	You did not get the basic structure right and there are al mistakes.	Clear and correct, but you might tweak the order to get more of a twist.	Clear and correct and well organized	
Length	combine gramm	ar, Fair	Good	Great	
	Way 50% aspects of delive	be 25% shorter	Very good, but you need to try and get it down to 5 sentences or 60 seconds, or longer than two sentences.	4-6 sentences and 60 seconds. You rock!	

- adjust the weights
- replace the descriptive text with text aligned to technical elevator pitch
- reverse order from weak to strong, similar to VALUE rubric (Rubric 12 here)

Figure 4.4 Rubric 4

	rewrite as hook, need, and/or opportunity	
Who needs it/who buys it: Who Who would buy it (if different fro Comments:	o benefits from your project? who would use your project solution? om who uses it)?	(15 pts.
Size of market/user base: How Comments:	many potential users/buyers exist for your project? combine size of market (user base) with who needs it or uses it	(15 pts.
Competitors/competitive advan your approach provide a competi Comments:	atage: Are there competing products/projects out there? How does itive advantage?	(15 pts.
What is the expected cost for yo much do you think you could sell Comments:	our project: How much will it cost you to build a prototype? How 1 the product for? Why?	(15 pts.
Presentation Style: Was the pres	sentation clear? Did all team members participate? Was the team	(15 pts.
enthusiastic about the project? Comments:		

- add scoring categories
- adjust the weights

Figure 4.5 Rubric 5

Criteria

Market Opportunity? Was value proposition of their opportunity clear? What is the problem they are solving? Was the size of their opportunity clear and quantified? Was the target customer of their opportunity identified?

Why you? Was their competitive advantage clear? Did they express why their management team is qualified for their opportunity?

Impact? Did they explicitly request some form of support (time, expertise or money)? Were they memorable? Could you repeat the main ideas of their venture? Was it 30-seconds or less?

Good Story? Did their pitch arouse your attention and hold it? Would you share their story with others?

Compelling? Was their argument persuasive and forceful? Did you learn something?

combine good story and compelling into aspects of delivery

- leverage the text for content details
- uses KEEN module terminology: value proposition

Figure 4.6 Rubric 6



Figure 4.7 Rubric 7

- 1. What is the assumed problem, need, and/or opportunity that your product, business, or non-profit addresses?
- 2. What is your idea?
- 3. Who do you assume to be your target customer(s)?
- 4. Where or how did the idea come to you?
 - What is your next step(s)?
 - What do you need help with to accomplish your next step(s)?

add next steps and resources

	Points	
Problem, need, or opportunity that their product, business, or non-profit will address		/10
Explanation of their idea		/10
Target customer(s)		/10
Where or how they came up with the idea		/10
Their next step(s)?		/10
What they need help with to accomplish the next step(s)		/10
Have they made a compelling case? Have they piqued your interest to help them		/10
Presentation (delivery, kept your interest, explained the idea well)		/10
Questions and Answers with judges		/10
For putting themselves out there and doing it	10	/10
TOTAL		/100

• leverage ideas in the text

Figure 4.8 Rubric 8



Figure 4.9 Rubric 9

Elements	Weight	5 Points	4 Points	3 Points	2 Points	1-0 Points
Content		The information included is accurate and completely addresses each component of the assigned topic or research question.	The information included adequately addresses each component of the assigned topic or research question.	The information included inadequately addresses the assigned topic or research question. The information included is sometimes inaccurate.	The information included does not address the assigned topic or research.	There is no evidence of accurate content information.
Delivery		The presenter effectively and creatively delivers the information while staying on topic. The presenter appears relaxed and self- confident. Body language, voice modulation, and eye contact are effectively used.	The presenter adequately delivers the information while staying on topic. The presenter appears relaxed and self- confident. Body language, voice modulation, and eye contact are mostly appropriate.	The presenter delivers the information but does not stay on topic. The presenter appears tense or nervous. Body language, voice modulation, and eye contact are inappropriate or lacking.	The presenter omits important information and does not stay on topic. The presenter appears tense or nervous. Body language, voice modulation, and eye contact are inappropriate or lacking.	The presenter does not effectively deliver the necessary information.
Organization		The presentation content has been organized using a logical sequence. The presentation is engaging and effective.	The presentation content has been mostly organized using a logical sequence, but some flaws exist. The presentation is adequate.	The presentation content has been organized using a somewhat logical sequence. The presentation is sometimes confusing.	The presentation content is disorganized, unclear, or confusing. The presentation is not adequate.	The presentation does not include evidence of organization.
Preparation		Presentation indicates detailed preparation.	Presentation indicates adequate preparation.	Presentation indicates minimal preparation.	Presentation indicates a lack of preparation.	Presentation shows no evidence of preparation.
Visual Aids		Visual aids are of excellent quality, easy to read, and relevant to the presentation. Visuals of all required elements are present.	Visual aids are adequate, easy to read, and relevant to the presentation. Visuals of all required elements are present.	Visual aids are somewhat effective but may include vocabulary or spelling errors. Visuals of all required elements are present.	Visual aids lack effectiveness. Aids may lack appropriate content. Aids include multiple vocabulary or spelling errors. All required elements are not present.	The presentation shows no evidence of visual aids.

Project Lead The Way, Inc. . Copyright 2012 . IED - Activity 1.3 What Is It? Elevator Pitch Rubric -

- focuses on quality of the presentation rather than specific pitch elements
- leverage text for delivery aspects

Figure	4.10	Rubric	10
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Content	Shows a full understanding of the topic more depth on	Shows a good understanding of the topic	Shows a good understanding of parts of the topic	Does not seem to understand the topic very well
Preparedness	Stud specific content prep needed obvi	ident seems etty prepared but aght have needed a couple more rehearsals	The student is somewhat prepared but it is clear that rehearsal was lacking	Student does not seem at all prepared to present
Speaks Clearly	Speaks clearly and distinctly all (100- 95%) the time, and mispronounces no words	Speaks clearly and distinctly all (100- 95%) the time, but mispronounces one word	Speaks clearly and distinctly most (94- 85%) of the time. Mispronounces no more than one word	Often numbles or cannot be understood or mispronounces more than one word
Posture and Eye Contact	Stands up straight looks relaxed and confident. Establishes eye contact with everyone in the room during the presentation.	Stands up straight and establishes eye contact with everyone in the room during the presentation.	Sometimes stands up straight and establishes eye contact.	Slouches and/or does not look at people during the presentation.
Enthusiasm	Facial expressions and body language generate a strong interest and enthusiasm about the topic in others	Facial expressions and body language sometimes generate a strong interest and enthusiasm about the topic in others.	Facial expressions and body language are used to try to generate enthusiasm, but seem somewhat faked.	Very little use of facial expressions or body language. Did not generate much interest in topic being presented
Attire	Business attire, very professional look not really part of KEEN module	Casual business attire. f the	Casual business attire, but wore sneakers or seemed somewhat wrinkled	General attire not appropriate for audience (jeans, t- shirt, shorts, etc.)
Comprehension	Student is able to accurately answer almost all questions posed by others about the topic	Student is able to accurately answer most questions posed by others about the topic	Student is able to accurately answer a few questions posed by others about the topic	Student is unable to accurately answer questions posed by others about the topic

- focuses on quality of the presentation rather than specific pitch elements
- leverage appropriate text for delivery aspects

Figure 4.11 Rubric 11

- Was the student prepared and ready to deliver their pitch?
- Did the student introduce themselves and clearly articulate what they intend to do with their degree?
- 3. Did the student demonstrate their passion for the industry?
- 4. Was the student's pitch well thought out and concise, holding your attention until the end?
- Did the student come across as sincere, confident, and engaged?
- 6. Were the words or statements the student used interesting, different, and thought provoking as opposed to cliché?
- 7. Did the student clearly communicate how their interest and strengths would benefit a prospective employer?
- 8. Did the student end the pitch with a clear action statement?
- Did the student maintain good posture and eye contact?

more geared toward a live pitch to get a job

Figure 4.12 Rubric 12

ORAL COMMUNICATION VALUE RUBRIC

for more information, please contact value@aacu.org



Definition

Oral communication is a prepared, purposeful presentation designed to increase knowledge, to foster understanding, or to promote change in the listeners' attitudes, values, beliefs, or behaviors.

Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance

	Capstone 4	Mile: 3	stones 2	Benchmark 1	
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introductionand conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.	
Language	Language choices are imaginative, memorable and compelling and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.	
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.	
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis which significantly supports the presentation or establishes the presenter's credibility/authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis which generally supports the presentation or establishes the presenter's credibility/authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis which partially supports the presentation or establishes the presenter's credibility/authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis which minimally supports the presentation or establishes the presenter's credibility/authority on the topic.	
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced, but is not explicitly stated in the presentation.	

- focuses on quality of the presentation rather than specific pitch elements
- high quality instrument widely used

5. Our Proposed Elevator Pitch Rubric

The rubric we synthesized from observations of the rubrics given in Section 4 is given in Figure 5.1. We had two goals for the presentation of the rubric: (1) the rubric should fit on one $8\frac{1}{2} \times 11$ inch piece of paper, and (2) the numeric scores should be determined by the persons applying the rubric in their courses. The scoring categories were inspired by the 4 categories used by the VALUE rubrics, although the descriptive words were altered (from "Capstone" to "Excellent," for example). The additional commentary on the right side of the rubric focuses on content: hook/intro, goals for the solution, target audience, competitive advantage, and closing. The bottom category is for the presentation's delivery and it includes evaluation of clarity and impact.

Figure 5.1 Elevator Pitch Rubric

content		
hook/intro The problem, need, or opportunity is clearly explained and the significance is evident; (video) the speakers' names and faces are presented clearly.	 excellent very good acceptable marginal 	needs improvement: problem/need/opportunity speaker introduction comments:
goals for solution A detailed explanation of the proposed solution and a convincing statement of how it provides value for the customer are given.	 excellent very good acceptable marginal 	needs improvement: solution value proposition comments:
target audience The intended audience is well defined/identified and the market or user base is quantified.	 excellent very good acceptable marginal 	needs improvement: target audience size comments:
competitive advantage Understanding of the competition and shortcomings are highlighted; credibility of the proposed solution and qualifications of the team indicate strong potential for success.	 excellent very good acceptable marginal 	needs improvement: competition advantage comments:
closing Cost of building a prototype and retail cost are anticipated and justified; the conclusion highlights benefits and potential for profit.	 excellent very good acceptable marginal 	needs improvement: costs conclusion comments:
delivery		
clarity Speakers are polished and delivery techniques make the presentation understandable and engaging.	 excellent very good acceptable marginal 	needs improvement: organization/length grammar/pronunciation visual aids comments:
impact The presentation inspires and holds attention; the pitch is persuasive and informative.	 excellent very good acceptable marginal 	needs improvement: enthusiasm creativity compelling story team participation comments:

6. Assessment and Conclusions

The rubric was employed for assessing elevator pitches for 20 senior design team projects. All of the students completed the KEEN elevator pitch module and participated in the in-class activities. The rubric was available to the students prior to starting the assignment. Using the point scoring system outlined in Table 6.1, grades were assigned based on the rubric. Table 6.2 provides a statistical summary of the grades assigned in the first offering of the KEEN module in our senior design course along with the first use of the rubric proposed in Section 5. The percentage row is what percent of the total points for the category is represented by the average score for that category. Overall, the scores were very good (most of the minimum scores belong to the same project.)

category	excellent	very good	acceptable	marginal
hook/intro	19-20	17-18	14-16	≤13
goals for solution	19-20	17-18	14-16	≤13
target audience	10	8-9	6-7	≤5
competitive advantage	19-20	17-18	14-16	≤13
closing	10	8-9	6-7	<u>≤</u> 5
clarity	10	8-9	6-7	≤5
impact	10	8-9	6-7	≤5

Table 6.1 Point Values Assigned to Categories

Table 6.2 Summary of Scoring (n = 20)

	total	intro	goals	audience	advantage	closing	clarity	impact
min	60	18	12	8	4	2	8	4
max	100	20	20	10	20	10	10	10
median	92	20	20	10	18	9	9.5	9.5
average	90.65	19.20	17.80	9.50	17.65	8.45	9.25	8.80
st-dev	9.21	1.01	2.82	0.76	3.48	2.09	0.85	1.61
percentage		96.00%	89.00%	95.00%	88.25%	84.50%	92.50%	88.00%

For the lowest scoring (marginal to acceptable) projects in the four lowest scoring categories, we examine the reasons for the assigned score. The description of the category is repeated here, along with the main criteria for scoring; selected comments from the professor evaluating the pitch are provided.

1. goals for solution

A detailed explanation of the proposed solution and a convincing statement of how it provides value for the customer are given.

 \square solution

□ value proposition

For teams that scored in the marginal (2) and acceptable (6) ranges, here are selected comments regarding their goals and value propositions:

- what is your product? (you never actually describe it)
- *does not contain a detailed explanation of the solution and how it provides value*
- insufficient detail about the proposed solution
- *it's not clear how the project will* [achieve its stated goals]

Only one of the teams had a shortcoming in the value proposition; all of the lower scores for this category were due to inadequate descriptions of the solution.

2. competitive advantage

Understanding of the competition and shortcomings are highlighted; credibility of the proposed solution and qualifications of the team indicate strong potential for success.

□ competition

□ advantage

For teams that scored in the marginal (1) and acceptable (3) ranges, here are selected comments regarding their competitive advantage:

- does not identify competition, credibility of proposed solution, or qualifications of the team
- no mention of team qualifications
- insufficient comparison to competing solutions
- *the advantage of the specific chosen solution is not clear other than that it's for* [topic]

Most teams did well in this category, and even the acceptable ones only needed some additional details. The marginal score, however, was really poor because the team appeared to ignore this aspect of the assignment.

3. closing

Cost of building a prototype and retail cost are anticipated and justified; the conclusion highlights benefits and potential for profit.

□ costs □ conclusion Only two teams were in the marginal category and one was in the acceptable category. The marginal closing neglected both the cost and the potential for profit, while the acceptable teams missed highlighting the benefits in the conclusion.

- cost of the project is not justified, nor is the potential for profit
- doesn't highlight benefits in conclusion

4. impact

The presentation inspires and holds attention; the pitch is persuasive and informative.

- □ enthusiasm
- □ creativity
- \Box compelling story
- □ team participation

One team scored in the marginal category and one scored in the acceptable category. The areas for improvement were identified as:

- *no visual aids; pitch is not very informative (little actual information content)*
- *lacking in visual aids and the speakers/story could be more compelling and creative*

Our intention in investigating the lower performing categories was to use the rubric as a diagnostic instrument. We thought it might be used to guide an instructor's focus the next time the course is offered or on a subsequent revision to the assignment by the current class. What we observed is that some teams apparently ignored the rubric and focused on only some aspects of the assignment; thus they scored poorly in most of the categories.

Two ideas that would reinforce the elevator pitch learning outcomes and might improve student achievement in the future are

- 1. go over the rubric in class and provide examples, and
- 2. have the students use the rubric to score good and bad pitches provided in the KEEN elevator pitch module.

In conclusion, we believe that the KEEN elevator pitch module is a valuable educational resource that can be leveraged in a variety of engineering courses at all levels in the undergraduate (and perhaps even graduate) curricula. The rubric provided here can help the students to understand the expectations for their assignment and can be used by professors to assist in grading and improving pedagogy.

7. Related Work

Duval-Couetil [6] provides an overview of entrepreneurship assessment practices targeted to faculty and program administrators. Shartrand et al. [11] assess the impact of technology entrepreneurship courses and programs on student learning by measuring prior and subsequent

knowledge of terms, concepts, and entrepreneurial thinking. Their studies indicate that professional competency can be increased by curricular experiences. Other researchers propose and study entrepreneurship for engineering/computing students that include writing and pitching business plans, but none include a rubric for evaluating a pitch [4, 5, 7, 8, 10, 12].

Klein and Yoder [9] provide rubrics associated with entrepreneurial learning outcomes. The rubric for the KEEN learning outcome "Construct and effectively communicate a customer-appropriate value proposition" overlaps with categories in our rubric (hook/intro and competitive advantage), but is 3 pages long and is missing the categories of clarity, impact, and qualifications of the team. The ONU General Education Outcome for "Effective Communication of a Customer-appropriate value proposition" has two categories related to oral communication: (1) overall organization of presentation, and (2) argument and rhetoric. It is too general for our purposes (not targeted to an elevator pitch specifically.)

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