Final Evaluation and Reflection

Evaluation Reflection Questions

1. What have you learned about logic mapping/modeling?

   Logically mapping the evaluation out beforehand significantly contributed to my understanding of the evaluation process as a whole. Maintaining focus on the objectives and strategies guided my later steps. The distribution of the workload was visible in a central, reliable location. At times, I did find myself questioning my thinking from earlier in the semester. I used these reflections to continually re-evaluate the importance of certain strategies and objectives.

2. What have you learned about writing evaluation questions?

   I have learned much about the challenges presented in selecting meaningful evaluation questions. I was surprised when some questions I had expected to use were not as helpful when considered against the objectives. Asking the right questions of the right respondents determines much about the evaluation's effectiveness.

3. What have you learned about selecting data/measures?

   My ideas about important data selection have changed throughout the semester. In the beginning, I was not clear on how I would measure the significance of the responses to my questions. Over time, I realized how to consider the important stakeholders involved, and to select data that will help those individuals or groups execute on their goals.

4. What have you learned about data analysis and writing up results?

     I noticed unexpected results. I expected there to be more use of mobile technology during flight training. It became apparent that mobile technology was underrepresented in the flight school I studied. Instructors here emphasize more fundamental (and reliable) systems that have been in use in aviation for decades.

5. Knowing what you know now, what might you have done differently in planning your evaluation?

    If I had the chance to repeat the evaluation, I would change a few things. I would first conduct the evaluation at a time when there were many current students available to question about varying stages of flight training. Another significant change I would make would be to have separate questionnaires for each demographic surveyed. Combining the questions on a survey and instructing respondents to answer only the relevant questions may have led to some inconsistencies in my results.
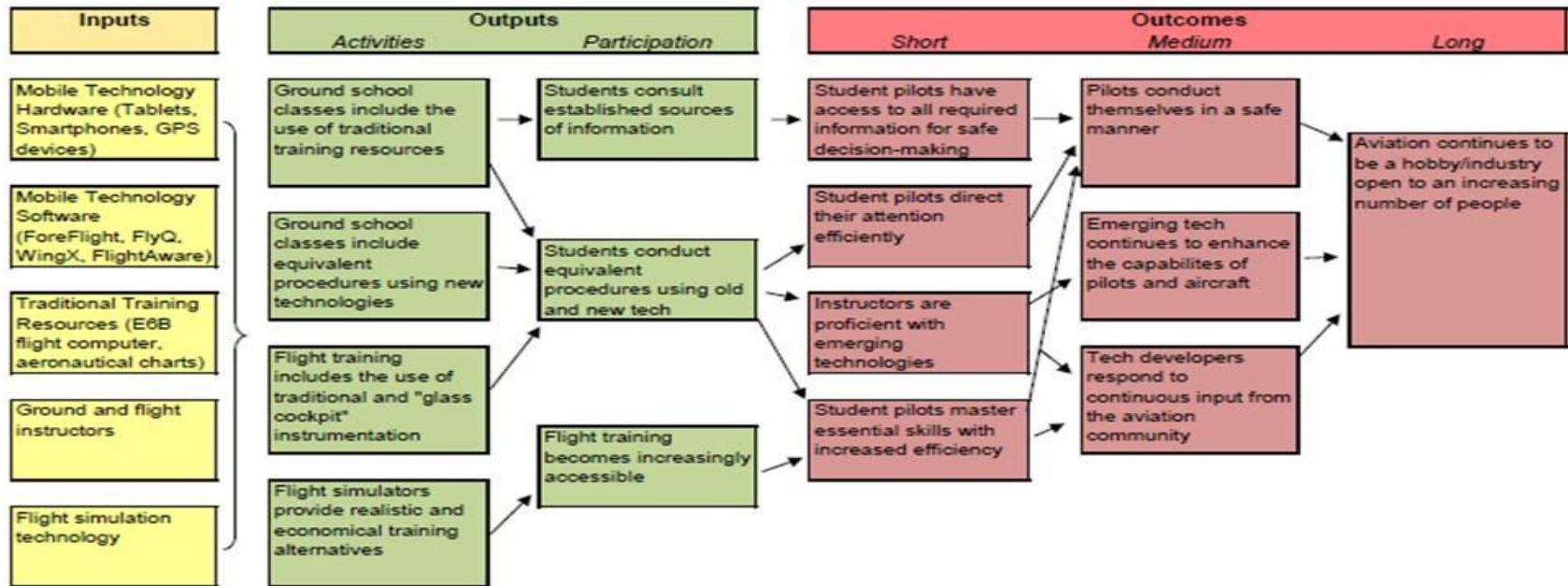
6. Do you think the information you have learned in this course will be useful to you in the future? Why or why not?

    I do expect that what I have learned in this course will serve me well in the future. I currently teach, but I aspire to more responsibilities above and beyond the classroom. The perspective of evaluator, which I have gained as a result of this course, will help me to consider strategies, stakeholders, and students in the programs with which I work.

ECI 502: Continuous Improvement of School Technology Initiatives
Evaluation Plan
Aviation Instruction Technology

Program: Aviation Instruction Tech Logic Model

Situation: Aviation is among the many industries revolutionized by mobile technology, with applications such as ForeFlight, FlyQ, and WingX changing the way pilots train and maintain proficiency. Ground and flight instruction are increasingly utilizing these and other technologies. While training still requires 'old-school' skills (plotting courses on paper charts, using the E6B flight computer, and figuring weight and balance tables), it is undeniable that flight is an industry/hobby inherently dependent on technology, be it mechanical, electronic, or otherwise. The continued development of new technologies and the training of current and future pilots to use them is thereby only a natural, evolutionary course of development.
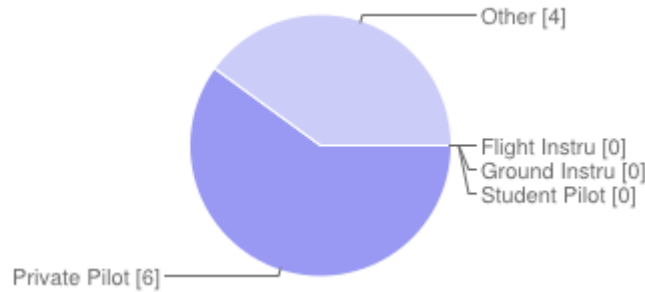
Inputs	Outputs		Outcomes		
	Activities	*Participation*	*Short*	*Medium*	*Long*
Mobile Technology Hardware (Tablets, Smartphones, GPS devices)	Ground school classes include the use of traditional training resources	Students consult established sources of information	Student pilots have access to all required information for safe decision-making	Pilots conduct themselves in a safe manner	Aviation continues to be a hobby/industry open to an increasing number of people
Mobile Technology Software (ForeFlight, FlyQ, WingX, FlightAware)	Ground school classes include equivalent procedures using new technologies	Students conduct equivalent procedures using old and new tech	Student pilots direct their attention efficiently	Emerging tech continues to enhance the capabilites of pilots and aircraft	
Traditional Training Resources (E6B flight computer, aeronautical charts)	Flight training includes the use of traditional and "glass cockpit" instrumentation		Instructors are proficient with emerging technologies	Tech developers respond to continuous input from the aviation community	
Ground and flight instructors		Flight training becomes increasingly accessible	Student pilots master essential skills with increased efficiency		
Flight simulation technology	Flight simulators provide realistic and economical training alternatives				

Assumptions: The ability of pilots to make use of relevent emerging technologies is as important as understanding the established fundamental mechanical, electronic, and natural systems addressed in flight instruction.

External Factors: The continuous development of new technologies useful in aviation; the increasing familiarity of trainees with mobile technologies; the enhanced abilities technologies afford humans

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Summary of Respondents

Flight Instructor	**0**	0%
Ground Instructor	**0**	0%
Student Pilot	**0**	0%
Private Pilot	**6**	60%
Other (Instrument)	**4**	40%

Though no current students responded to the survey, at least 3 private pilots surveyed had just completed PPL training within the preceding 90 days.

Why did you do it? (Objective): Student pilots have access to all required information for safe decision making
What did you do?(Strategies): • *Ground school classes include the use of traditional training resources* • *Students consult established sources of information* *Activities:* ▪ Student pilots attend weekly ground school classes that focus on: – Introduction of aeronautical charts, plotters, E6B flight computers, weight/balance tables, and weather reports – Discussion of how to use these tools and resources for flight planning and in-flight – Instructors and outside experts share lessons to provide specific examples of proper/improper use of these tools

Evaluation Questions	Measures/Data Sources	Results		
What do you need to know?	*How will you find out?*	*What were the results?*		
As a student pilot, do you feel that you built aviation mobile application knowledge and skills because of participating in the ground school sessions and flight lessons? (quantity)	Student Questionnaire Scale: A/D + Explain FR			
		1 Strongly Agree	**0**	0%
		2	**1**	17%
		3	**2**	33%
		4	**2**	33%
		5 Strongly Disagree	**1**	17%
		• Respondents did not indicate aviation mobile applications as a major focus of their private pilot training		

As a student pilot , what aviation mobile technology and skills did you develop? (quality)	Student Questionnaire Free response	• 1) Use of weather, mapping and calculator applications. • 2) Study Buddy I used this app to study for my written test which was really helpful • 3) I used moblie applications on my phone and tablet to practice reading the weather conditions and deciphering METARS, TAFS, AIRMETS, SIGMENTS, PIREPS, etc. I would also use mobile applications to verify my flight planning and weight and balance calculations. • 4) Foreflight, Aviation WX (METARs, TAFs, WindsAloft), FlightAware, Google Maps/Earth, calculator, Living Earth, Weather • Respondents indicated that they used aviation mobile technology primarily to check weather. • Respondents used test-specific study apps to practice retired versions of FAA knowledge test questions • Some calculations were also conducted on mobile tech

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?)*
Among this community, aviation mobile technology is not a significant focus of the instructor-led training for students seeking the private pilot certificate. However, student pilots apparently seek out helpful mobile apps to "unofficially" aid in flight training.
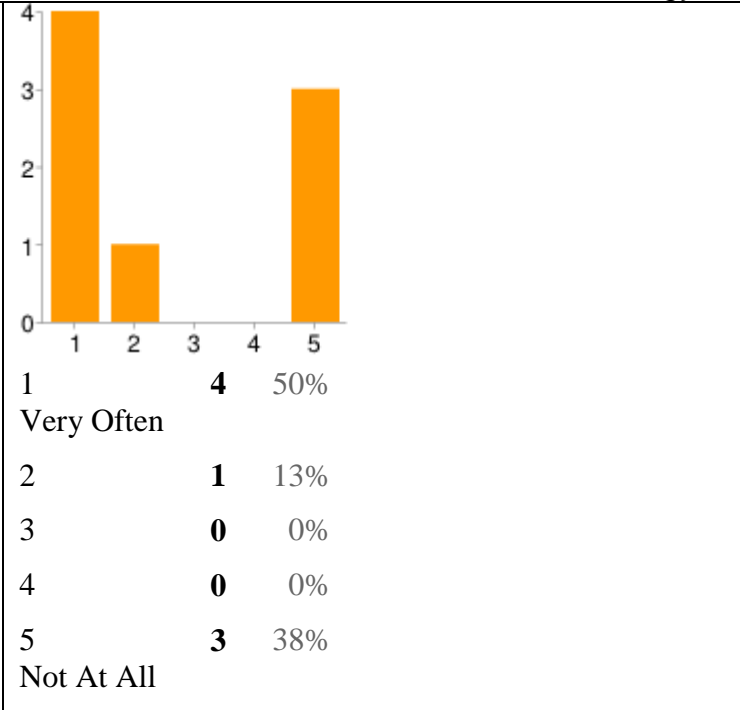
Summary of Results (*Interpretation of Data*):
Student pilots are seeking out additional information and resources that instructors are not providing.
This is an "old fashioned" flight school, with training aircraft built in the 1970s. Students are concentrating on the systems required to pilot the training aircraft, and not more.

Next Steps (*Action Steps*):
Instructors should take student interest in newer technologies into account when providing instruction. Time should be spent exploring applications of mobile tech, but also emphasize the preferred dependability of traditional resources and equipment.

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Why did you do it? (Objective): Pilots conduct themselves in a safe manner

What did you do?(Strategies):
- **Ground school classes include the use of traditional training resources**
- **Ground school classes include equivalent procedures using new technologies**
- **Flight training includes the use of traditional and "glass cockpit" instrumentation**
- **Student pilots conduct equivalent procedures using old and new tech**
- **Flight simulators provide realistic and economical training alternatives**
- **Flight training becomes increasingly accessible**

Activities:
- Student pilots will attend regular ground school classes to introduce concepts and techniques
- Student pilots will attend regular flight instruction sessions to reinforce concepts and practice techniques
- Student pilots will make regular use of flight simulators to further reinforce concepts and practice techniques when conditions do not favor the use of actual aircraft

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
As a licensed pilot, to what extent did you employ the use of aviation mobile applications during flight training? (quality)	Pilot Questionnaire Scale: Very Often to Not at All	1 **0** 0% Very Often 2 **0** 0% 3 **1** 13% 4 **5** 63% 5 **2** 25% Not At All • Respondents indicated that aviation mobile applications were not employed often during private pilot training. • This indicates that they relied instead on traditional sources of information (paper charts, steam gauges, E6B, pencil & paper)

As a licensed pilot, to what extent do you employ the use of aviation mobile apps after your check ride? (quality)	Pilot Questionnaire Scale: Very Often to Not at All	
		1 **4** 50% Very Often
		2 **1** 13%
		3 **0** 0%
		4 **0** 0%
		5 **3** 38% Not At All

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?)*
Licensed pilots from representing several years of training cohorts indicated that instructors at this flight school had not included the use of aviation mobile technology in the past.

Summary of Results (*Interpretation of Data*):
Upon completion of the training for the certificate sought, pilots significantly increase their utilization of mobile aviation apps. Since pilots surveyed represented a range of ratings (private, instrument, instructor), this indicates that training at several levels, within this particular flight school, maintains an emphasis on traditional resources and equipment over newer technologies. Pilots seek out information and resources to supplement their underserved interests in new tech for training.
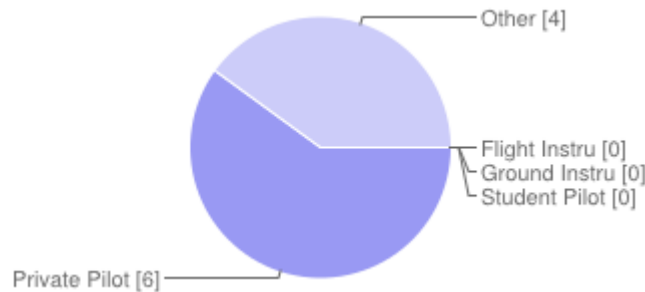
Next Steps (*Action Steps*):
Instructors should cater to the interest of training pilots during training.
Instructors should increase proficiency with newer technologies such as mobile aviation apps
Even though the training aircraft are not equipped with "glass cockpits," mobile tech is readily available and should be incorporated into the structured environment of flight training rather than left to trainees to explore undirected.

Assignment 7: Making Decisions

ECI 502: Continuous Improvement of School Technology Initiatives
Evaluation Plan
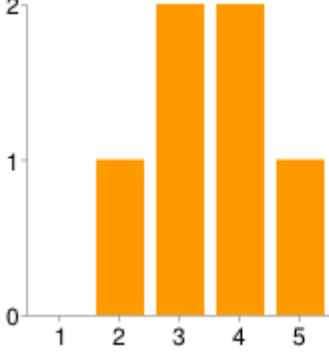**Aviation Instruction Technology**

Summary of Respondents

Flight Instructor	**0**	0%
Ground Instructor	**0**	0%
Student Pilot	**0**	0%
Private Pilot	**6**	60%
Other (Instrument)	**4**	40%

Other [4]
Flight Instru [0]
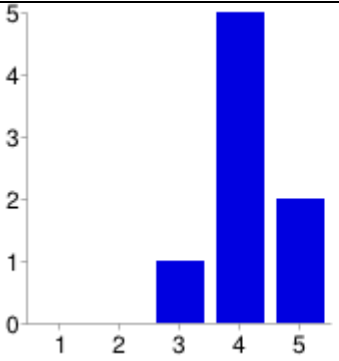Ground Instru [0]
Student Pilot [0]
Private Pilot [6]

Though no current students responded to the survey, at least 3 private pilots surveyed had just completed PPL training within the preceding 90 days.

Why did you do it? (Objective): Student pilots have access to all required information for safe decision making
What did you do?(Strategies):   • *Ground school classes include the use of traditional training resources*   • *Students consult established sources of information*   *Activities:*   ▪ Student pilots attend weekly ground school classes that focus on: – Introduction of aeronautical charts, plotters, E6B flight computers, weight/balance tables, and weather reports   – Discussion of how to use these tools and resources for flight planning and in-flight   – Instructors and outside experts share lessons to provide specific examples of proper/improper use of these tools

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*

	Student Questionnaire Scale: A/D + Explain FR	
As a student pilot, do you feel that you built aviation mobile application knowledge and skills because of participating in the ground school sessions and flight lessons?(quantity)		1 **0** 0% Strongly Agree 2 **1** 17% 3 **2** 33% 4 **2** 33% 5 **1** 17% Strongly Disagree • Respondents did not indicate that aviation mobile applications were a major focus of their private pilot training
As a student pilot , what aviation mobile technology and skills did you develop? (quality)	Student Questionnaire Free response	• 1) Use of weather, mapping and calculator applications. • 2) Study Buddy I used this app to study for my written test which was really helpful • 3) I used moblie applications on my phone and tablet to practice reading the weather conditions and deciphering METARS, TAFS, AIRMETS, SIGMENTS, PIREPS, etc. I would also use mobile applications to verify my flight planning and weight and balance calculations. • 4) Foreflight, Aviation WX (METARs, TAFs, WindsAloft), FlightAware, Google Maps/Earth, calculator, Living Earth, Weather

		• Respondents indicated that they used aviation mobile technology primarily to check weather. • Respondents used test-specific study apps to practice retired versions of FAA knowledge test questions • Some calculations were also conducted on mobile tech

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

Among this community, aviation mobile technology is not a significant focus of the instructor-led training for students seeking the private pilot certificate. However, student pilots apparently seek out helpful mobile apps to "unofficially" aid in flight training.

 Summary of Results (*Interpretation of Data*):

Student pilots are seeking out additional information and resources that instructors are not providing.

This is an "old fashioned" flight school, with training aircraft built in the 1970s. Students are concentrating on the systems required to pilot the training aircraft, and not more.

 Next Steps (*Action Steps*):

Instructors should take student interest in newer technologies into account when providing instruction. Time should be spent exploring applications of mobile tech, but also emphasize the preferred dependability of traditional resources and equipment.

Why did you do it? (Objective): Pilots conduct themselves in a safe manner

What did you do?(Strategies):
- **Ground school classes include the use of traditional training resources**
- **Ground school classes include equivalent procedures using new technologies**
- **Flight training includes the use of traditional and "glass cockpit" instrumentation**
- **Student pilots conduct equivalent procedures using old and new tech**
- **Flight simulators provide realistic and economical training alternatives**
- **Flight training becomes increasingly accessible**

Activities:
- Student pilots will attend regular ground school classes to introduce concepts and techniques
- Student pilots will attend regular flight instruction sessions to reinforce concepts and practice techniques
- Student pilots will make regular use of flight simulators to further reinforce concepts and practice techniques when conditions do not favor the use of actual aircraft

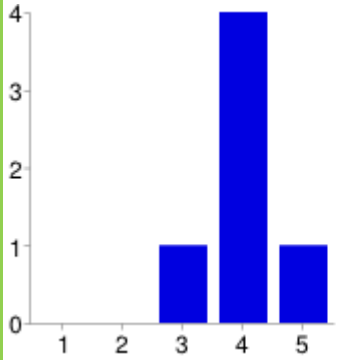| Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
As a licensed pilot, to what extent did you employ the use of aviation mobile applications during flight training? (quality)	Pilot Questionnaire Scale: Very Often to Not at All	1　　　　　**0**　　0% Very Often 2　　　　　**0**　　0% 3　　　　　**1**　　13% 4　　　　　**5**　　63% 5　　　　　**2**　　25% Not At All • Respondents indicated that aviation mobile applications were not employed often

		during private pilot training.
		• This indicates that they relied instead on traditional sources of information (paper charts, steam gauges, E6B, pencil & paper)
As a licensed pilot, to what extent do you employ the use of aviation mobile apps after your check ride?(quality)	Pilot Questionnaire Scale: Very Often to Not at All

1   **4**   50%
Very Often

2   **1**   13%

3   **0**   0%

4   **0**   0%

5   **3**   38%
Not At All |

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?)*
Licensed pilots from representing several years of training cohorts indicated that instructors at this flight school had not included the use of aviation mobile technology in the past.

 Summary of Results (*Interpretation of Data*):
Upon completion of the training for the certificate sought, pilots significantly increase their utilization of mobile aviation apps. Since pilots surveyed represented a range of ratings (private, instrument, instructor), this indicates that training at several levels, within this particular flight school, maintains an emphasis on traditional resources and equipment over newer technologies. Pilots seek out information and resources to supplement their underserved interests in new tech for training.

Next Steps (*Action Steps*):
Instructors should cater to the interest of training pilots during training.
Instructors should increase proficiency with newer technologies such as mobile aviation apps
Even though the training aircraft are not equipped with "glass cockpits," mobile tech is readily available and should be incorporated into the structured environment of flight training rather than left to trainees to explore undirected.

Assignment 6: Results

ECI 509: Continuous Improvement of School Technology Initiatives
Evaluation Plan
Aviation Instruction Technology

Why did you do it? (Objective): Student pilots have access to all required information for safe decision making	
What did you do?(Strategies): • *Ground school classes include the use of traditional training resources* • *Students consult established sources of information* *Activities:* ▪ Student pilots attend weekly ground school classes that focus on: – Introduction of aeronautical charts, plotters, E6B flight computers, weight/balance tables, and weather reports – Discussion of how to use these tools and resources for flight planning and in-flight – Instructors and outside experts share lessons to provide specific examples of proper/improper use of these tools	

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
As a student pilot, do you feel that you built aviation mobile application knowledge and skills because of participating in the ground school sessions and flight lessons? (quantity)	Student Questionnaire Scale: A/D + Explain FR	 1 Strongly Agree **0** 0% 2 **0** 0% 3 **1** 25% 4 **2** 50% 5 Strongly Disagree **1** 25% • None of the respondents indicated that aviation mobile applications were a major focus of their private pilot training
As a student pilot , what aviation mobile technology and skills did you develop? (quality)	Student Questionnaire Free response	• 1) Use of weather, mapping and calculator applications. • 2) Study Buddy I used this app to study for my written test which was really helpful • 3) I used moblie applications on my phone and tablet to practice reading the weather conditions and deciphering METARS, TAFS, AIRMETS, SIGMENTS, PIREPS, etc. I

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| | | would also use mobile applications to verify my flight planning and weight and balance calculations. |
| | | • Respondents indicated that they used aviation mobile technology primarily to check weather.
 • Respondents used test-specific study apps to practice retired versions of FAA knowledge test questions
 • Some calculations were also conducted on mobile tech |

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?)*
Among this community, aviation mobile technology is not a significant focus of the instructor-led training for students seeking the private pilot certificate. However, student pilots apparently seek out helpful mobile apps to "unofficially" aid in flight training.

Summary of Results (*Interpretation of Data*):
Student pilots are seeking out additional information and resources that instructors are not providing.
This is an "old fashioned" flight school, with training aircraft built in the 1970s. Students are learning the systems required to pilot the training aircraft, and little more.

Next Steps (*Action Steps*):
Instructors should take student interest in newer technologies into account when providing instruction. Time should be spent exploring applications of mobile tech, but also emphasize the preferred dependability of traditional resources and equipment.

Why did you do it? (Objective): Pilots conduct themselves in a safe manner

What did you do?(Strategies):
- **Ground school classes include the use of traditional training resources**
- **Ground school classes include equivalent procedures using new technologies**
- **Flight training includes the use of traditional and "glass cockpit" instrumentation**
- **Student pilots conduct equivalent procedures using old and new tech**
- **Flight simulators provide realistic and economical training alternatives**
- **Flight training becomes increasingly accessible**

Activities:
- Student pilots will attend regular ground school classes to introduce concepts and techniques
- Student pilots will attend regular flight instruction sessions to reinforce concepts and practice techniques
- Student pilots will make regular use of flight simulators to further reinforce concepts and practice techniques when conditions do not favor the use of actual aircraft

Evaluation Questions	Measures/Data Sources	Results			
What do you need to know?	*How will you find out?*	*What were the results?*			
As a licensed pilot, to what extent did you employ the use of aviation mobile applications during flight training? (quality)	Pilot Questionnaire Scale: Very Often to Not at All		1 Very Often	**0**	0%
			2	**0**	0%
			3	**1**	17%
			4	**4**	67%
			5 Not At All	**1**	17%

- Respondents indicated that aviation mobile applications were not employed often during private pilot training.
- This indicates that they relied instead on traditional sources of information (paper charts, steam gauges, E6B, pencil & paper)

As a licensed pilot, to what extent do you employ the use of aviation mobile apps after your check ride? (quality)	Pilot Questionnaire Scale: Very Often to Not at All		1 Very Often	**4**	67%
			2	**0**	0%
			3	**0**	0%
			4	**0**	0%
			5 Not At All	**2**	33%

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)
Licensed pilots from representing several years of training cohorts indicated that instructors at this flight school had not included the use of aviation mobile technology in the past.

 Summary of Results (*Interpretation of Data*):
Upon completing the training for the sought certificate, pilots significantly increase their utilization of mobile aviation apps. Since pilots surveyed represented a range of ratings (private, instrument, instructor), this indicates that training at several levels, within this particular flight school, maintains an emphasis on traditional resources and equipment over newer technologies. Pilots seek out information and resources to supplement their underserved interests in new tech for training.

Next Steps (*Action Steps*):
Instructors should cater to the interest of training pilots during training.
Instructors should increase proficiency with newer technologies such as mobile aviation apps
Even though the training aircraft are not equipped with "glass cockpits," mobile tech is readily available and should be incorporated into the structured environment of flight training rather than left to trainees to explore undirected.

Assignment 5: Selecting Data Sources

Step 1: Respond to following questions

- Is this evaluation formative or summative?
  - Summative – The evaluation will gauge the overall acquisition of new skills, comprehension of key concepts, and execution of requisite techniques.
- Is the focus on needs assessment, implementation of strategies (process), or achieving objectives (outcome)?
  - Process – The focus is on the implementation of new strategies, exploring the ways in which new aviation technology can enhance the process of instructing pilots.

Step 2: Insert your 'strategies' and 'objectives' from your Project Logic Map in your evaluation plan

Program: Aviation Instruction Tech Logic Model

Situation: Aviation is among the many industries revolutionized by mobile technology, with applications such as ForeFlight, FlyQ, and WingX changing the way pilots train and maintain proficiency. Ground and flight instruction are increasingly utilizing these and other technologies. While training still requires 'old-school' skills (plotting courses on paper charts, using the E6B flight computer, and figuring weight and balance tables), it is undeniable that flight is an industry/hobby inherently dependent on technology, be it mechanical, electronic, or otherwise. The continued development of new technologies and the training of current and future pilots to use them is thereby only a natural, evolutionary course of development.

Inputs	Outputs		Outcomes		
	Activities	Participation	Short	Medium	Long

Inputs:
- Mobile Technology Hardware (Tablets, Smartphones, GPS devices)
- Mobile Technology Software (ForeFlight, FlyQ, WingX, FlightAware)
- Traditional Training Resources (E6B flight computer, aeronautical charts)
- Ground and flight instructors
- Flight simulation technology

Activities:
- Ground school classes include the use of traditional training resources
- Ground school classes include equivalent procedures using new technologies
- Flight training includes the use of traditional and "glass cockpit" instrumentation
- Flight simulators provide realistic and economical training alternatives

Participation:
- Students consult established sources of information
- Students conduct equivalent procedures using old and new tech
- Flight training becomes increasingly accessible

Short:
- Student pilots have access to all required information for safe decision-making
- Student pilots direct their attention efficiently
- Instructors are proficient with emerging technologies
- Student pilots master essential skills with increased efficiency

Medium:
- Pilots conduct themselves in a safe manner
- Emerging tech continues to enhance the capabilites of pilots and aircraft
- Tech developers respond to continuous input from the aviation community

Long:
- Aviation continues to be a hobby/industry open to an increasing number of people

Assumptions: The ability of pilots to make use of relevent emerging technologies is as important as understanding the established fundamental mechanical, electronic, and natural systems addressed in flight instruction.

External Factors: The continuous development of new technologies useful in aviation; the increasing familiarity of trainees with mobile technologies; the enhanced abilities technologies afford humans

ECI 509: Continuous Improvement of School Technology Initiatives
Evaluation Plan
Aviation Instruction Technology

Why did you do it? (Objective): Student pilots have access to all required information for safe decision making		

What did you do?(Strategies):
- *Ground school classes include the use of traditional training resources*
- *Students consult established sources of information*

Activities:
- Student pilots attend weekly ground school classes that focus on:
- Introduction of aeronautical charts, plotters, E6B flight computers, weight/balance tables, and weather reports
- Discussion of how to use these tools and resources for flight planning and in-flight
- Instructors and outside experts share lessons to provide specific examples of proper/improper use of these tools

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
How many student pilots felt they built new technology knowledge and skills because of participating in the ground school sessions and flight lessons? (quantity)	Student Questionnaire Scale: A/D + Explain FR	•
What new technology knowledge and skills did students develop? (quality)	Student Questionnaire Free response	•

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

Summary of Results (*Interpretation of Data*):

Next Steps (*Action Steps*):

Why did you do it? (Objective): Student direct their attention efficiently

What did you do?(Strategies):
- *Ground school classes include the use of traditional training resources*
- *Ground school classes include equivalent procedures using new technologies*
- *Flight training includes the use of traditional and "glass cockpit" instrumentation*
- *Student pilots conduct equivalent procedures using old and new tech*

Activities:
- Student pilots attend weekly ground school classes that focus on:
– Introduction of traditional cockpit instrumentation ("steam gauges")
– Introduction of glass cockpit instrumentation
– Discussion of how to interpret instrumentation in-flight
– Instructors and outside experts share lessons to provide specific examples of proper/improper use of these tools
- Student pilots flight instruction sessions that focus on:
– Application of concepts covered in ground school classes
– First-hand experience using equipment

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
To what extent do students feel confident in their ability to use new tools and resources on the ground and in the aircraft? (quality)	Student/Instructor Questionnaire Scale: Very Confident to Not at All Confident	●
What new tools and resources are students using on the ground and in the aircraft? (quantity)	Student/Instructor Questionnaire Select all that apply	●
To what extent are students interested in learning about additional tools and resources? (quality)	Student/Instructor Questionnaire Scale: Very interested to Not at All Interested	●
What additional tools and resources are students interested in learning more about? (quantity)	Student/Instructor Questionnaire Free Response	●

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

Summary of Results (*Interpretation of Data*):

Next Steps (*Action Steps*):

Why did you do it? (Objective): Instructors are proficient with emerging technologies

What did you do?(Strategies):
- **Ground school classes include the use of traditional training resources**
- **Ground school classes include equivalent procedures using new technologies**
- **Flight training includes the use of traditional and "glass cockpit" instrumentation**
- **Student pilots conduct equivalent procedures using old and new tech**

Activities:
- By including traditional and new technologies in the training material, instructors will remain constantly informed and challenged to meet the needs of pilots in training

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
How many new technologies did instructors include? (quantity)	Instructor Questionnaire Free Response	•
What types of new technologies were covered? (quality)	Instructor Questionnaire Select all that apply + other	•
Instructors in which content areas (ground or flight) used new technologies most frequently? (quantity)	Instructor Questionnaire Select all that apply	•

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

Summary of Results (*Interpretation of Data*):

Next Steps (*Action Steps*):

Why did you do it? (Objective): Student pilots master essential skills with increased efficiency

What did you do?(Strategies):
- **Ground school classes include the use of traditional training resources**
- **Ground school classes include equivalent procedures using new technologies**
- **Flight training includes the use of traditional and "glass cockpit" instrumentation**
- **Student pilots conduct equivalent procedures using old and new tech**
- **Flight simulators provide realistic and economical training alternatives**
- **Flight training becomes increasingly accessible**

Activities:
- Student pilots will attend regular ground school classes to introduce concepts and techniques
- Student pilots will attend regular flight instruction sessions to reinforce concepts and practice techniques
- Student pilots will make regular use of flight simulators to further reinforce concepts and practice techniques when conditions do not favor the use of actual aircraft

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
Do instructors notice that students learn essential skills faster or better?	Instructor Questionnaire Y/N Explain	●
To what extent did students feel confident in their mastery of essential skills? (quality)	Student/Instructor Questionnaire Scale: Very Confident to Not at All Confident	●
How many hours of instruction did the students require before their first solo flight? Before their check ride? (quantity)	Student/Instructor Questionnaire Free Response	●
Is there an inverse relationship between CFI use of technology-based resources and amt of flight instruction required prior to key checkpoints in training?	Instructor Questionnaire	●

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

 Summary of Results (*Interpretation of Data*):

Next Steps (*Action Steps*):

Why did you do it? (Objective): Pilots conduct themselves in a safe manner

What did you do?(Strategies):
- **Ground school classes include the use of traditional training resources**
- **Ground school classes include equivalent procedures using new technologies**
- **Flight training includes the use of traditional and "glass cockpit" instrumentation**
- **Student pilots conduct equivalent procedures using old and new tech**
- **Flight simulators provide realistic and economical training alternatives**
- **Flight training becomes increasingly accessible**

Activities:
- Student pilots will attend regular ground school classes to introduce concepts and techniques
- Student pilots will attend regular flight instruction sessions to reinforce concepts and practice techniques
- Student pilots will make regular use of flight simulators to further reinforce concepts and practice techniques when conditions do not favor the use of actual aircraft

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
To what extent did licensed pilots employ the use of new technologies in training? (quality)	Pilot Questionnaire Scale: Very Often to Not at All	•
To what extent did licensed pilots employ the use of new technologies after training? (quality)	Pilot Questionnaire Scale: Very Often to Not at All	•
How many emergencies have recently licensed pilots experienced? (quantity)	Pilot Questionnaire Y/N if Y How many?	•
Does the above number represent an increase or a decrease? (quantity)	Pilot Questionnaire	•
What types of technologies helped pilots to manage emergencies? (quality)	Pilot Questionnaire Free Response	•

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

Summary of Results (*Interpretation of Data*):

Next Steps (*Action Steps*):

Why did you do it? (Objective): Emerging tech continues to enhance the capabilities of pilots and aircraft	

What did you do?(Strategies):
- **Ground school classes include the use of traditional training resources**
- **Ground school classes include equivalent procedures using new technologies**
- **Flight training includes the use of traditional and "glass cockpit" instrumentation**
- **Student pilots conduct equivalent procedures using old and new tech**
- **Flight simulators provide realistic and economical training alternatives**
- **Flight training becomes increasingly accessible**

Activities:
- Student pilots will attend regular ground school classes to introduce concepts and techniques
- Student pilots will attend regular flight instruction sessions to reinforce concepts and practice techniques
- Student pilots will make regular use of flight simulators to further reinforce concepts and practice techniques when conditions do not favor the use of actual aircraft

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
What aircraft are outfitted with new technology? (quantity)	Developer Questionnaire Free Response	•
Have aircraft emergencies decreased as new tech has been implemented? (quantity)	Developer Questionnaire Free Response	•

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

Summary of Results (*Interpretation of Data*):

Next Steps (*Action Steps*):

Why did you do it? (Objective): Tech developers respond to continuous input from the aviation community

What did you do?(Strategies):
- **Ground school classes include the use of traditional training resources**
- **Ground school classes include equivalent procedures using new technologies**
- **Flight training includes the use of traditional and "glass cockpit" instrumentation**
- **Student pilots conduct equivalent procedures using old and new tech**
- **Flight simulators provide realistic and economical training alternatives**
- **Flight training becomes increasingly accessible**

Activities:
- Student pilots will attend regular ground school classes to introduce concepts and techniques
- Student pilots will attend regular flight instruction sessions to reinforce concepts and practice techniques
- Student pilots will make regular use of flight simulators to further reinforce concepts and practice techniques when conditions do not favor the use of actual aircraft

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
To what extent do tech developers interact with the aviation community? (quality)	Developer Questionnaire Scale: Very Involved to Not at All Involved + Explain FR	•
How many companies are developing new aviation technology? (quantity)	Developer Questionnaire Free Response	•
What types of new technologies are in development? (quality)	Developer Questionnaire Free Response	•

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

Summary of Results (*Interpretation of Data*):

Next Steps (*Action Steps*):

Evaluation Plan

Step 1: Respond to following questions

- Is this evaluation formative or summative?
    - Summative – The evaluation will gauge the overall acquisition of new skills, comprehension of key concepts, and execution of requisite techniques.
- Is the focus on needs assessment, implementation of strategies (process), or achieving objectives (outcome)?
    - Process – The focus is on the implementation of new strategies, exploring the ways in which new aviation technology can enhance the process of instructing pilots.

Step 2: Insert your 'strategies' and 'objectives' from your Project Logic Map in your evaluation plan

ECI 509: Continuous Improvement of School Technology Initiatives
Evaluation Plan
Aviation Instruction Technology

Why did you do it? (Objective): Student pilots have access to all required information for safe decision making	

What did you do?(Strategies):
- ***Ground school classes include the use of traditional training resources***
- ***Students consult established sources of information***

Activities:
- Student pilots attend weekly ground school classes that focus on:
- Introduction of aeronautical charts, plotters, E6B flight computers, weight/balance tables, and weather reports
- Discussion of how to use these tools and resources for flight planning and in-flight
- Instructors and outside experts share lessons to provide specific examples of proper/improper use of these tools

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
How many student pilots felt they built new technology knowledge and skills because of participating in the ground school sessions and flight lessons? (quantity)		•
What new technology knowledge and skills did students develop? (quality)		•

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

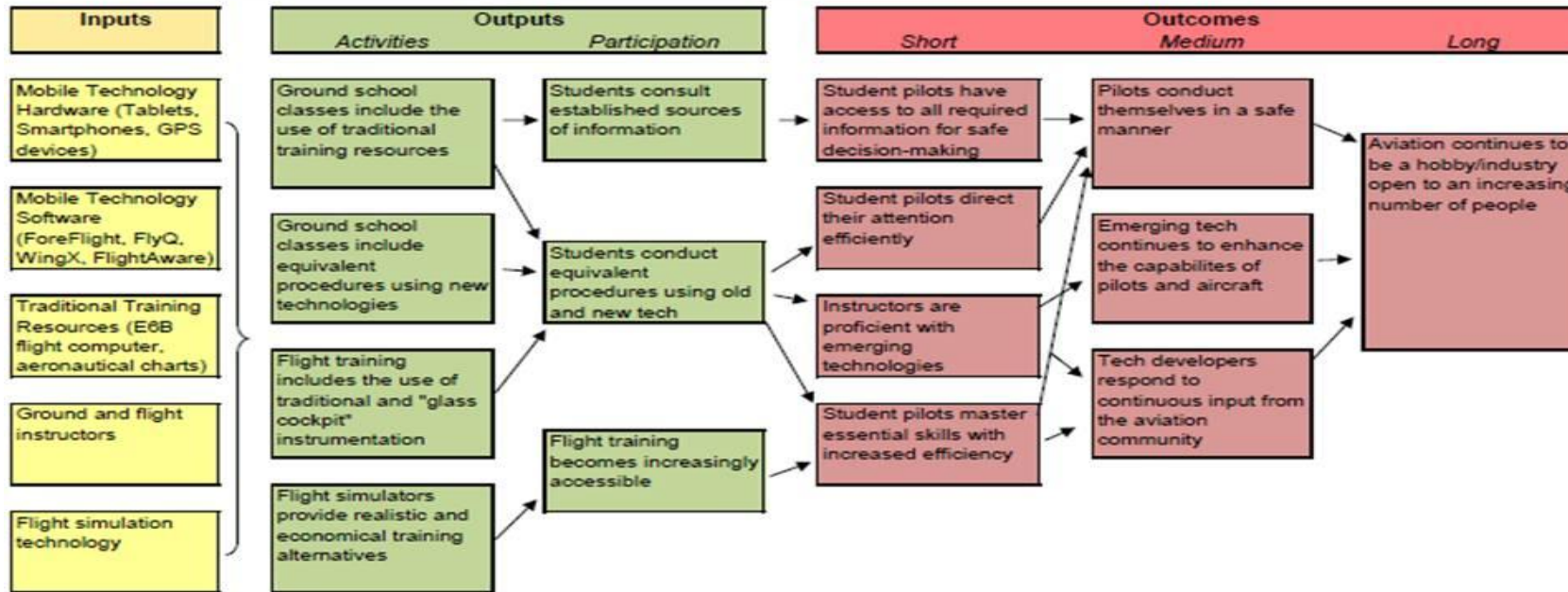 Summary of Results (*Interpretation of Data*):

 Next Steps (*Action Steps*):

Why did you do it? (Objective): Student direct their attention efficiently

What did you do?(Strategies):
- **Ground school classes include the use of traditional training resources**
- **Ground school classes include equivalent procedures using new technologies**
- **Flight training includes the use of traditional and "glass cockpit" instrumentation**
- **Student pilots conduct equivalent procedures using old and new tech**

Activities:
- Student pilots attend weekly ground school classes that focus on:
  – Introduction of traditional cockpit instrumentation ("steam gauges")
  – Introduction of glass cockpit instrumentation
  – Discussion of how to interpret instrumentation in-flight
  – Instructors and outside experts share lessons to provide specific examples of proper/improper use of these tools
- Student pilots flight instruction sessions that focus on:
  – Application of concepts covered in ground school classes
  – First-hand experience using equipment

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
To what extent do students feel confident in their ability to use new tools and resources on the ground and in the aircraft? (quality)		•
What new tools and resources are students using on the ground and in the aircraft? (quantity)		•
To what extent are students interested in learning about additional tools and resources? (quality)		•
What additional tools and resources are students interested in learning more about? (quantity)		•

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

Summary of Results (*Interpretation of Data*):

Next Steps (*Action Steps*):

Why did you do it? (Objective): Instructors are proficient with emerging technologies

What did you do?(Strategies):
- **Ground school classes include the use of traditional training resources**
- **Ground school classes include equivalent procedures using new technologies**
- **Flight training includes the use of traditional and "glass cockpit" instrumentation**
- **Student pilots conduct equivalent procedures using old and new tech**

Activities:
- By including traditional and new technologies in the training material, instructors will remain constantly informed and challenged to meet the needs of pilots in training

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
How many new technologies did instructors include? (quantity)		•
What types of new technologies were covered? (quality)		•
Instructors in which content areas (ground or flight) used new technologies most frequently? (quantity)		•

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

Summary of Results (*Interpretation of Data*):

Next Steps (*Action Steps*):

Why did you do it? (Objective): Student pilots master essential skills with increased efficiency

What did you do?(Strategies):
- **Ground school classes include the use of traditional training resources**
- **Ground school classes include equivalent procedures using new technologies**
- **Flight training includes the use of traditional and "glass cockpit" instrumentation**
- **Student pilots conduct equivalent procedures using old and new tech**
- **Flight simulators provide realistic and economical training alternatives**
- **Flight training becomes increasingly accessible**

Activities:
- Student pilots will attend regular ground school classes to introduce concepts and techniques
- Student pilots will attend regular flight instruction sessions to reinforce concepts and practice techniques
- Student pilots will make regular use of flight simulators to further reinforce concepts and practice techniques when conditions do not favor the use of actual aircraft

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
Do instructors notice that students learn essential skills faster or better?		●
To what extent did students feel confident in their mastery of essential skills? (quality)		●
How many hours of instruction did the students require before their first solo flight? Before their check ride? (quantity)		●
Is there an inverse relationship between CFI use of technology-based resources and amt of flight instruction required prior to key checkpoints in training?		●

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

Summary of Results (*Interpretation of Data*):

Next Steps (*Action Steps*):

Why did you do it? (Objective): Pilots conduct themselves in a safe manner		
What did you do?(Strategies): • **Ground school classes include the use of traditional training resources** • **Ground school classes include equivalent procedures using new technologies** • **Flight training includes the use of traditional and "glass cockpit" instrumentation** • **Student pilots conduct equivalent procedures using old and new tech** • **Flight simulators provide realistic and economical training alternatives** • **Flight training becomes increasingly accessible** **Activities:** ▪ Student pilots will attend regular ground school classes to introduce concepts and techniques ▪ Student pilots will attend regular flight instruction sessions to reinforce concepts and practice techniques ▪ Student pilots will make regular use of flight simulators to further reinforce concepts and practice techniques when conditions do not favor the use of actual aircraft		
Evaluation Questions *What do you need to know?*	**Measures/Data Sources** *How will you find out?*	**Results** *What were the results?*
To what extent did licensed pilots employ the use of new technologies in training? (quality)		•
To what extent did licensed pilots employ the use of new technologies after training? (quality)		•
How many emergencies have recently licensed pilots experienced? (quantity)		•
Does the above number represent an increase or a decrease? (quantity)		•
What types of technologies helped pilots to manage emergencies? (quality)		•
Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*) Summary of Results (*Interpretation of Data*): Next Steps (*Action Steps*):		

Why did you do it? (Objective): Emerging tech continues to enhance the capabilities of pilots and aircraft

What did you do?(Strategies):
- **Ground school classes include the use of traditional training resources**
- **Ground school classes include equivalent procedures using new technologies**
- **Flight training includes the use of traditional and "glass cockpit" instrumentation**
- **Student pilots conduct equivalent procedures using old and new tech**
- **Flight simulators provide realistic and economical training alternatives**
- **Flight training becomes increasingly accessible**

Activities:
- Student pilots will attend regular ground school classes to introduce concepts and techniques
- Student pilots will attend regular flight instruction sessions to reinforce concepts and practice techniques
- Student pilots will make regular use of flight simulators to further reinforce concepts and practice techniques when conditions do not favor the use of actual aircraft

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
What aircraft are outfitted with new technology? (quantity)		•
Have aircraft emergencies decreased as new tech has been implemented? (quantity)		•

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

Summary of Results (*Interpretation of Data*):

Next Steps (*Action Steps*):

Why did you do it? (Objective): Tech developers respond to continuous input from the aviation community		
What did you do?(Strategies): • **Ground school classes include the use of traditional training resources** • **Ground school classes include equivalent procedures using new technologies** • **Flight training includes the use of traditional and "glass cockpit" instrumentation** • **Student pilots conduct equivalent procedures using old and new tech** • **Flight simulators provide realistic and economical training alternatives** • **Flight training becomes increasingly accessible** **Activities:** ▪ Student pilots will attend regular ground school classes to introduce concepts and techniques ▪ Student pilots will attend regular flight instruction sessions to reinforce concepts and practice techniques ▪ Student pilots will make regular use of flight simulators to further reinforce concepts and practice techniques when conditions do not favor the use of actual aircraft		
Evaluation Questions *What do you need to know?*	**Measures/Data Sources** *How will you find out?*	**Results** *What were the results?*
To what extent do tech developers interact with the aviation community? (quality)		•
How many companies are developing new aviation technology? (quantity)		•
What types of new technologies are in development? (quality)		•
Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*) Summary of Results (*Interpretation of Data*): Next Steps (*Action Steps*):		

Assignment 3c: Revised Questions

Brainstorm **implementation questions** about your project **strategies**
1. ***Ground school classes include equivalent procedures using new technologies***
   - What new technologies were covered? (quantity)
   - To what extent did the ground instructors include an introduction to new technologies and discussion of how to use them for flight planning, navigation, and decision-making (quality)
   - To what extent did the instructors think the new technologies made a positive impact on student pilot training? (quality)

2. ***Student pilots conduct equivalent procedures using old and new tech***
   - To what extent did ground school sessions include a balance of both new and traditional technology? (quantity)
   - Did the students appreciate or benefit from the blend of technology? (quality)

3. ***Flight training includes the use of traditional and "glass cockpit" instrumentation***
   - How many ground school sessions were provided on traditional instrumentation? (quantity)
   - How many ground school sessions were provided on glass cockpit instrumentation? (quantity)
   - To what extent did the ground school sessions include an introduction to traditional instrumentation and discussion of how to use it for navigation and decision-making? (quality)
   - Did the instructors think the information was necessary for student pilot training? (quality)

4. ***Flight simulators provide realistic and economical training alternatives***
   - What percentage of students logged time in flight simulators? (quantity)
   - How many hours on average did students log in flight simulators? (quantity)
   - To what extent did the simulated flight lessons aid students in navigation and decision-making? (quality)

5. ***Flight training becomes increasingly accessible***
   - How many instructors have experienced an increase in the number of students enrolled in flight training? (quantity)
   - How many students completed the requirements for a license (experimental, light sport, or private)? (quantity)

Brainstorm **impact questions** to evaluate how well your **objectives** are being met.
A. ***Student pilots have access to all required information for safe decision making***
   - How many student pilots felt they built new technology knowledge and skills because of participating in the ground school sessions and flight lessons? (quantity)

- What new technology knowledge and skills did students develop? (quality)

B. ***Student direct their attention efficiently***
- To what extent do students feel confident in their ability to use new tools and resources on the ground and in the aircraft? (quality)
- What new tools and resources are students using on the ground and in the aircraft? (quantity)
- To what extent are students interested in learning about additional tools and resources? (quality)
- What additional tools and resources are students interested in learning more about? (quantity)

C. **Instructors are proficient with emerging technologies**
- How many new technologies did instructors include? (quantity)
- What types of new technologies were covered? (quality)
- Instructors in which content areas (ground or flight) used new technologies most frequently? (quantity)

D. **Student pilots master essential skills with increased efficiency**
- Do instructors notice that students learn essential skills faster or better?
- To what extent did students feel confident in their mastery of essential skills? (quality)
  - How many hours of instruction did the students require before their first solo flight? Before their check ride? (quantity)
  - Is there an inverse relationship between CFI use of technology-based resources and amt of flight instruction required prior to key checkpoints in training?

E. **Pilots conduct themselves in a safe manner**
- To what extent did licensed pilots employ the use of new technologies in training? (quality)
- To what extent did licensed pilots employ the use of new technologies after training? (quality)
- How many emergencies have recently licensed pilots experienced? (quantity)
- Does the above number represent an increase or a decrease? (quantity)
- What types of technologies helped pilots to manage emergencies? (quality)

F. **Emerging tech continues to enhance the capabilities of pilots and aircraft**
- What aircraft are outfitted with new technology? (quantity)

- Have aircraft emergencies decreased as new tech has been implemented? (quantity)

G. **Tech developers respond to continuous input from the aviation community**
   - To what extent do tech developers interact with the aviation community? (quality)
   - How many companies are developing new aviation technology? (quantity)
   - What types of new technologies are in development? (quality)

Assignment 3b: Writing Questions

Step 1:

Project Name: Aviation Instruction Technology
Timeframe: Ongoing

Brainstorm **implementation questions** about your project **strategies**
6. ***Ground school classes include the use of traditional training resources***
    - How many ground school sessions were provided during training? (quantity)
    - How many ground instructors included traditional resources? (quantity)
    - What traditional resources were covered during ground school sessions? (quantity)
    - To what extent did the sessions include an introduction to traditional resources and discussion of how to use traditional resources for flight planning, navigation, and decision-making? (quality)
    - Did the instructors think the resources were necessary for student pilot training? (quality)

7. ***Students consult established sources of information***
    - How many ground school sessions covered the use of established information sources? (quantity)
    - What established information sources were covered? (quantity)
    - To what extent did the ground school sessions include an introduction to established information sources and discussion of how to use the sources for flight planning, navigation, and decision-making? (quality)
    - Did the students think the information met their needs? (quality)

8. ***Ground school classes include equivalent procedures using new technologies***
    - How many ground school sessions were provided on new technologies? (quantity)
    - How many ground instructors provided sessions covering new aviation technologies? (quantity)
    - What new technologies were covered? (quantity)
    - To what extent did the sessions include an introduction to new technologies and discussion of how to use them for flight planning, navigation, and decision-making (quality)
    - Did the instructors think the new technologies were necessary for student pilot training? (quality)

9. ***Student pilots conduct equivalent procedures using old and new tech***
    - How many ground school sessions included practice using traditional technology? (quantity)

- How many ground school sessions included practice using new technology? (quantity)
- How many ground school sessions did the student pilots attend? (quantity)
- Did the students appreciate the blend of technology? (quality)

10. *Flight training includes the use of traditional and "glass cockpit" instrumentation*
- How many ground school sessions were provided on traditional instrumentation? (quantity)
- How many ground school sessions were provided on glass cockpit instrumentation? (quantity)
- How many ground instructors provided sessions on traditional instrumentation? (quantity)
- How many ground instructors provided sessions on glass cockpit instrumentation? (quantity)
- To what extent did the ground school sessions include an introduction to traditional instrumentation and discussion of how to use it for navigation and decision-making? (quality)
- Did the instructors think the information was necessary for student pilot training? (quality)

11. *Flight simulators provide realistic and economical training alternatives*
- How many students logged time in flight simulators? (quantity)
- How many hours did students log in flight simulators? (quantity)
- How much did simulator time cost per hour? (quantity)
- Does the simulator time cost less than aircraft rental? (quantity)
- How many flight instructors provided simulated flight lessons? (quantity)
- To what extent did the simulated flight lessons aid students in navigation and decision-making? (quality)
- Did the instructors think the simulated flight lessons helped the students to progress faster? (quality)

12. *Flight training becomes increasingly accessible*
- How many students were enrolled in flight training? (quantity)
- How many students completed the requirements for a license (experimental, light sport, or private)? (quantity)
- How many ground instructors are teaching at the institution? (quantity)
- Did the simulated flight training attract more students? (quality)
- Has the cost of simulator time decreased with an increase in the number of students? (quality)

Brainstorm **impact questions** to evaluate how well your **objectives** are being met.
   H. *Student pilots have access to all required information for safe decision making*

- How many student pilots felt they built new technology knowledge and skills because of participating in the ground school sessions and flight lessons? (quantity)
- To what extent did students build their technology knowledge and skills? (quality)
- What new technology knowledge and skills did students develop? (quantity)

I. ***Student direct their attention efficiently***
- To what extent do students feel confident in their ability to use new tools and resources on the ground and in the aircraft? (quality)
- What new tools and resources are students using on the ground and in the aircraft? (quantity)
- To what extent are students interested in learning about additional tools and resources? (quality)
- What additional tools and resources are students interested in learning more about? (quantity)

J. **Instructors are proficient with emerging technologies**
- To what extent did instructors enjoy the process of including new technologies in student pilot training? (quality)
- How many new technologies did instructors include? (quantity)
- What types of new technologies were covered? (quality)
- Instructors in which content areas (ground or flight) used new technologies most frequently? (quantity)
- How many new technologies were actually utilized on the ground and in the aircraft? (quantity)

K. **Student pilots master essential skills with increased efficiency**
- To what extent did students feel confident in their mastery of essential skills? (quality)
- How many hours of instruction did the students require before their first solo flight? Before their check ride? (quantity)

L. **Pilots conduct themselves in a safe manner**
- To what extent did licensed pilots employ the use of new technologies in training? (quality)
- To what extent did licensed pilots employ the use of new technologies after training? (quality)
- How many emergencies have recently licensed pilots experienced? (quantity)
- Does the above number represent an increase or a decrease? (quantity)
- What types of technologies helped pilots to manage emergencies? (quality)

M. **Emerging tech continues to enhance the capabilities of pilots and aircraft**

- To what extent are new technologies used in aviation? (quality)
- How many new technologies do pilots use? (quantity)
- What types of new technologies are used? (quality)
- How many aircraft are outfitted with new technology? (quantity)
- What aircraft are outfitted with new technology? (quantity)
- Have aircraft emergencies decreased as new tech has been implemented? (quantity)

N. **Tech developers respond to continuous input from the aviation community**
   - To what extent do tech developers interact with the aviation community? (quality)
   - How many companies are developing new aviation technology? (quantity)
   - What types of new technologies are in development? (quality)

Convergent Phase

Step 2: Select the **2-3** of the best questions for each project strategy and objective based on the following criteria: (p. 249)

1. Be of interest to key audiences/stakeholders?
2. Reduce present uncertainty?
3. Yield important information?
4. Be of continuing (not fleeting) interest?
5. Be critical to the study's scope and comprehensiveness?
6. Is feasible considering financial and human resources, time, methods, and technology?

   - Is this evaluation formative or summative?
   - Summative – The evaluation will gauge the overall acquisition of new skills, comprehension of key concepts, and execution of requisite techniques.

   - Is the focus on needs assessment, implementation of strategies (process), or achieving objectives (outcome)?

   - Process – The focus is on the implementation of new strategies, exploring the ways in which new aviation technology can enhance the process of instructing pilots.

Brainstorm **implementation questions** about your project **strategies**

13. ***Ground school classes include the use of traditional training resources***
    - What traditional resources were covered during ground school sessions? (quantity)
    - To what extent did the sessions include an introduction to traditional resources and discussion of how to use traditional resources for flight planning, navigation, and decision-making? (quality)
    - Did the instructors think the resources were necessary for student pilot training? (quality)

14. ***Students consult established sources of information***
    - How many ground school sessions covered the use of established information sources? (quantity)
    - What established information sources were covered? (quantity)
    - To what extent did the ground school sessions include an introduction to established information sources and discussion of how to use the sources for flight planning, navigation, and decision-making? (quality)
    - Did the students think the information met their needs? (quality)

15. ***Ground school classes include equivalent procedures using new technologies***
    - How many ground instructors provided sessions covering new aviation technologies? (quantity)
    - What new technologies were covered? (quantity)
    - To what extent did the sessions include an introduction to new technologies and discussion of how to use them for flight planning, navigation, and decision-making (quality)
    - Did the instructors think the new technologies were necessary for student pilot training? (quality)

16. ***Student pilots conduct equivalent procedures using old and new tech***
    - How many ground school sessions included practice using traditional technology? (quantity)
    - How many ground school sessions included practice using new technology? (quantity)
    - Did the students appreciate the blend of technology? (quality)

17. ***Flight training includes the use of traditional and "glass cockpit" instrumentation***
    - How many ground school sessions were provided on traditional instrumentation? (quantity)
    - How many ground school sessions were provided on glass cockpit instrumentation? (quantity)
    - To what extent did the ground school sessions include an introduction to traditional instrumentation and discussion of how to use it for navigation and decision-making? (quality)
    - Did the instructors think the information was necessary for student pilot training? (quality)

18. *Flight simulators provide realistic and economical training alternatives*
    - How many students logged time in flight simulators? (quantity)
    - How many hours did students log in flight simulators? (quantity)
    - How much did simulator time cost per hour? (quantity)
    - To what extent did the simulated flight lessons aid students in navigation and decision-making? (quality)

19. *Flight training becomes increasingly accessible*
    - How many students were enrolled in flight training? (quantity)
    - How many students completed the requirements for a license (experimental, light sport, or private)? (quantity)

Brainstorm **impact questions** to evaluate how well your **objectives** are being met.

O. *Student pilots have access to all required information for safe decision making*
    - How many student pilots felt they built new technology knowledge and skills because of participating in the ground school sessions and flight lessons? (quantity)
    - What new technology knowledge and skills did students develop? (quality)

P. *Student direct their attention efficiently*
    - To what extent do students feel confident in their ability to use new tools and resources on the ground and in the aircraft? (quality)
    - What new tools and resources are students using on the ground and in the aircraft? (quantity)
    - To what extent are students interested in learning about additional tools and resources? (quality)
    - What additional tools and resources are students interested in learning more about? (quantity)

Q. **Instructors are proficient with emerging technologies**
    - How many new technologies did instructors include? (quantity)
    - What types of new technologies were covered? (quality)
    - Instructors in which content areas (ground or flight) used new technologies most frequently? (quantity)

R. **Student pilots master essential skills with increased efficiency**
    - To what extent did students feel confident in their mastery of essential skills? (quality)

- How many hours of instruction did the students require before their first solo flight? Before their check ride? (quantity)

S. **Pilots conduct themselves in a safe manner**
- To what extent did licensed pilots employ the use of new technologies in training? (quality)
- To what extent did licensed pilots employ the use of new technologies after training? (quality)
- How many emergencies have recently licensed pilots experienced? (quantity)
- Does the above number represent an increase or a decrease? (quantity)
- What types of technologies helped pilots to manage emergencies? (quality)

T. **Emerging tech continues to enhance the capabilities of pilots and aircraft**
- What types of new technologies are used? (quality)
- What aircraft are outfitted with new technology? (quantity)
- Have aircraft emergencies decreased as new tech has been implemented? (quantity)

U. **Tech developers respond to continuous input from the aviation community**
- To what extent do tech developers interact with the aviation community? (quality)
- How many companies are developing new aviation technology? (quantity)
- What types of new technologies are in development? (quality)
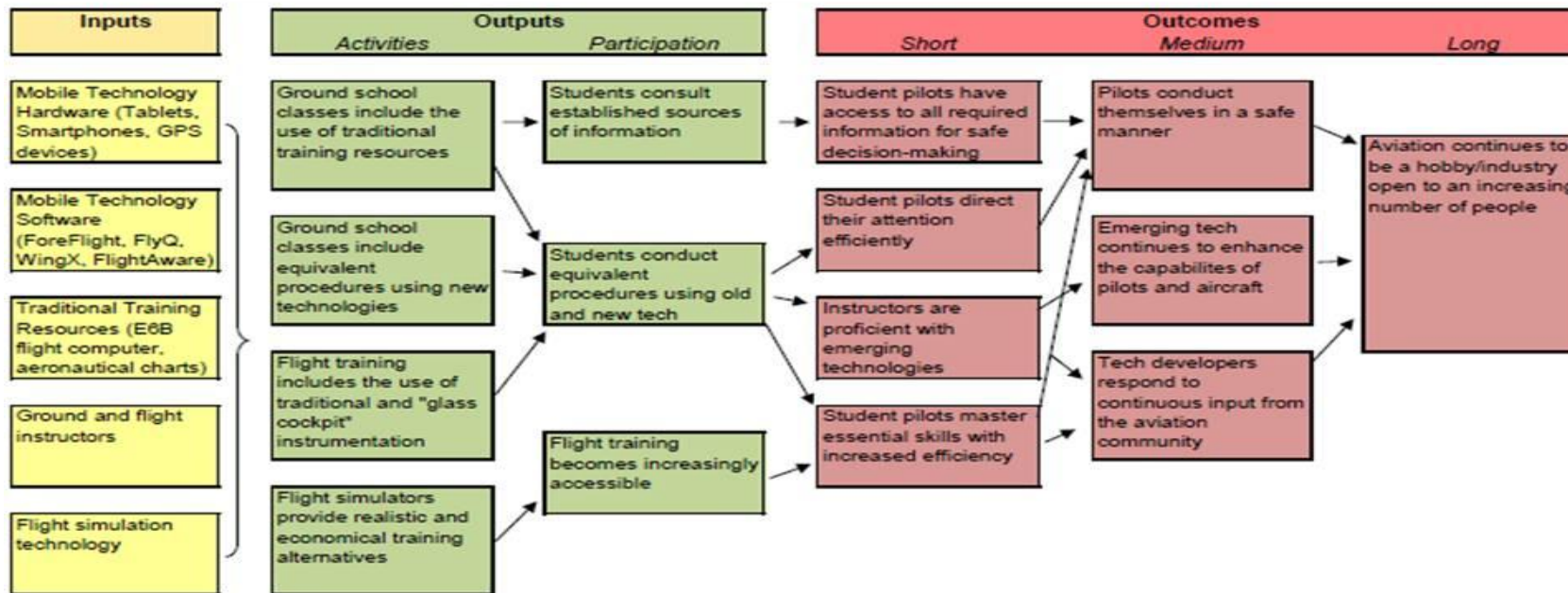
Assignment 3: Evaluation Plan

Step 1: Respond to following questions

- Is this evaluation formative or summative?
    - Summative – The evaluation will gauge the overall acquisition of new skills, comprehension of key concepts, and execution of requisite techniques.
- Is the focus on needs assessment, implementation of strategies (process), or achieving objectives (outcome)?
    - Process – The focus is on the implementation of new strategies, exploring the ways in which new aviation technology can enhance the process of instructing pilots.

Step 2: Insert your 'strategies' and 'objectives' from your Project Logic Map in your evaluation plan

Program: Aviation Instruction Tech Logic Model

Situation: Aviation is among the many industries revolutionized by mobile technology, with applications such as ForeFlight, FlyQ, and WingX changing the way pilots train and maintain proficiency. Ground and flight instruction are increasingly utilizing these and other technologies. While training still requires 'old-school' skills (plotting courses on paper charts, using the E6B flight computer, and figuring weight and balance tables), it is undeniable that flight is an industry/hobby inherently dependent on technology, be it mechanical, electronic, or otherwise. The continued development of new technologies and the training of current and future pilots to use them is thereby only a natural, evolutionary course of development.

Inputs	Outputs		Outcomes		
	Activities	Participation	Short	Medium	Long

Inputs	Activities	Participation	Short	Medium	Long
Mobile Technology Hardware (Tablets, Smartphones, GPS devices)	Ground school classes include the use of traditional training resources	Students consult established sources of information	Student pilots have access to all required information for safe decision-making	Pilots conduct themselves in a safe manner	Aviation continues to be a hobby/industry open to an increasing number of people
Mobile Technology Software (ForeFlight, FlyQ, WingX, FlightAware)	Ground school classes include equivalent procedures using new technologies	Students conduct equivalent procedures using old and new tech	Student pilots direct their attention efficiently	Emerging tech continues to enhance the capabilites of pilots and aircraft	
Traditional Training Resources (E6B flight computer, aeronautical charts)	Flight training includes the use of traditional and "glass cockpit" instrumentation		Instructors are proficient with emerging technologies	Tech developers respond to continuous input from the aviation community	
Ground and flight instructors		Flight training becomes increasingly accessible	Student pilots master essential skills with increased efficiency		
Flight simulation technology	Flight simulators provide realistic and economical training alternatives				

Assumptions: The ability of pilots to make use of relevent emerging technologies is as important as understanding the established fundamental mechanical, electronic, and natural systems addressed in flight instruction.

External Factors: The continuous development of new technologies useful in aviation; the increasing familiarity of trainees with mobile technologies; the enhanced abilities technologies afford humans

ECI 509: Continuous Improvement of School Technology Initiatives
Evaluation Plan
Aviation Instruction Technology

Why did you do it? (Objective): Student pilots have access to all required information for safe decision making		

What did you do?(Strategies):
- ***Ground school classes include the use of traditional training resources***
- ***Students consult established sources of information***

Activities:
- ▪ Student pilots attend weekly ground school classes that focus on:
- – Introduction of aeronautical charts, plotters, E6B flight computers, weight/balance tables, and weather reports
- – Discussion of how to use these tools and resources for flight planning and in-flight
- – Instructors and outside experts share lessons to provide specific examples of proper/improper use of these tools

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
		•
		•
		•

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

 Summary of Results (*Interpretation of Data*):

 Next Steps (*Action Steps*):

Why did you do it? (Objective): Student direct their attention efficiently

What did you do?(Strategies):
- *Ground school classes include the use of traditional training resources*
- *Ground school classes include equivalent procedures using new technologies*
- *Flight training includes the use of traditional and "glass cockpit" instrumentation*
- *Student pilots conduct equivalent procedures using old and new tech*

Activities:
- Student pilots attend weekly ground school classes that focus on:
  – Introduction of traditional cockpit instrumentation ("steam gauges")
  – Introduction of glass cockpit instrumentation
  – Discussion of how to interpret instrumentation in-flight
  – Instructors and outside experts share lessons to provide specific examples of proper/improper use of these tools
- Student pilots flight instruction sessions that focus on:
  – Application of concepts covered in ground school classes
  – First-hand experience using equipment

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
		•
		•
		•

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

Summary of Results (*Interpretation of Data*):

Next Steps (*Action Steps*):

Why did you do it? (Objective): Instructors are proficient with emerging technologies

What did you do?(Strategies):
- **Ground school classes include the use of traditional training resources**
- **Ground school classes include equivalent procedures using new technologies**
- **Flight training includes the use of traditional and "glass cockpit" instrumentation**
- **Student pilots conduct equivalent procedures using old and new tech**

Activities:
- By including traditional and new technologies in the training material, instructors will remain constantly informed and challenged to meet the needs of pilots in training

Evaluation Questions	Measures/Data Sources	Results
What do you need to know?	*How will you find out?*	*What were the results?*
		•
		•
		•

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?)*

Summary of Results (*Interpretation of Data*):

Next Steps (*Action Steps*):

Why did you do it? (Objective): Student pilots master essential skills with increased efficiency

What did you do?(Strategies):
- **Ground school classes include the use of traditional training resources**
- **Ground school classes include equivalent procedures using new technologies**
- **Flight training includes the use of traditional and "glass cockpit" instrumentation**
- **Student pilots conduct equivalent procedures using old and new tech**
- **Flight simulators provide realistic and economical training alternatives**
- **Flight training becomes increasingly accessible**

Activities:
- Student pilots will attend regular ground school classes to introduce concepts and techniques
- Student pilots will attend regular flight instruction sessions to reinforce concepts and practice techniques
- Student pilots will make regular use of flight simulators to further reinforce concepts and practice techniques when conditions do not favor the use of actual aircraft

Evaluation Questions *What do you need to know?*	Measures/Data Sources *How will you find out?*	Results *What were the results?*
		•
		•
		•

Decisions (*Guiding Questions: What do the results mean? What are you going to do now?*)

Summary of Results (*Interpretation of Data*):
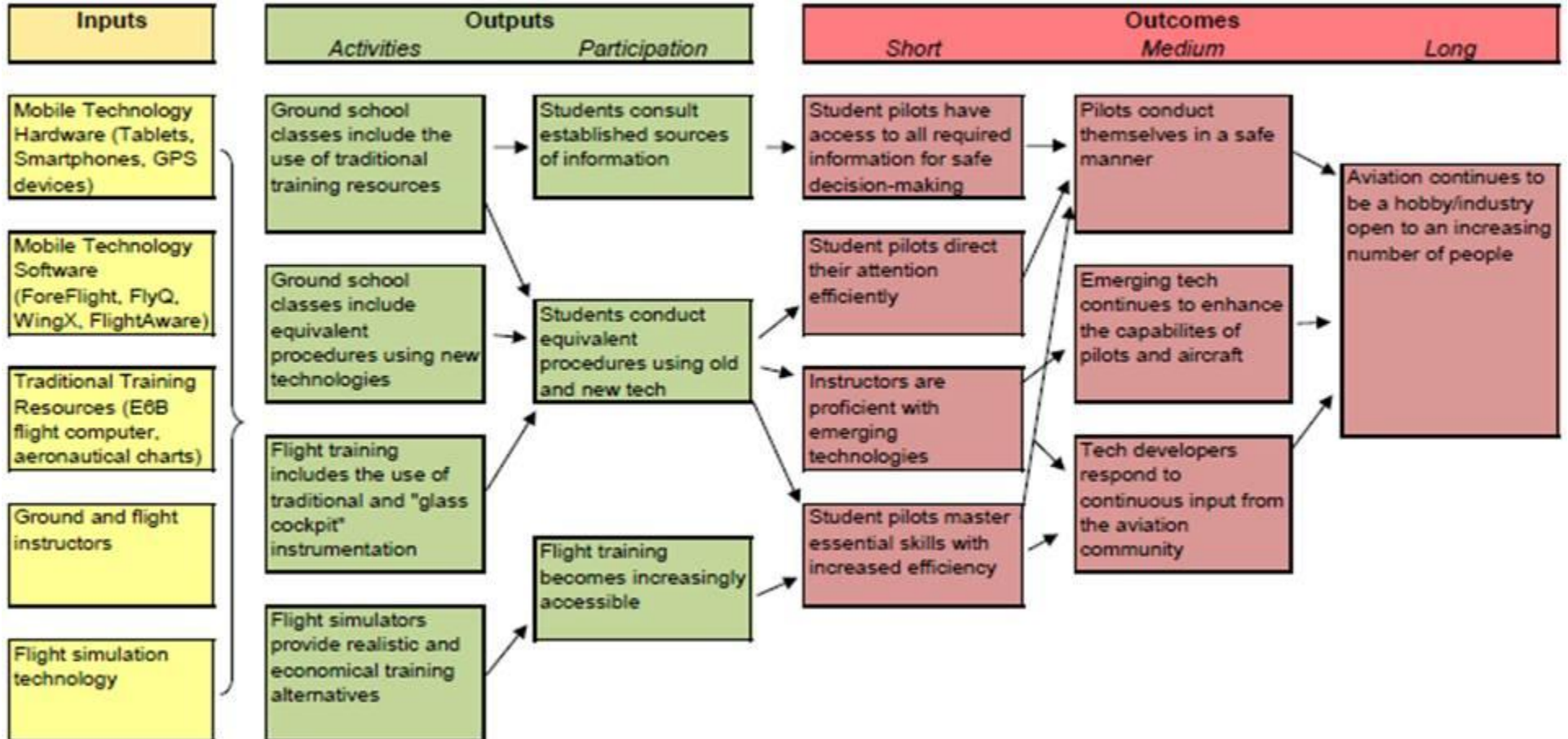
Next Steps (*Action Steps*):

Assignment 2: Logic Map

Program: **Aviation Instruction Tech** Logic Model

Situation: Aviation is among the many industries revolutionized by mobile technology, with applications such as ForeFlight, FlyQ, and WingX changing the way pilots train and maintain proficiency. Ground and flight instruction are increasingly utilizing these and other technologies. While training still requires 'old-school' skills (plotting courses on paper charts, using the E6B flight computer, and figuring weight and balance tables), it is undeniable that flight is an industry/hobby inherently dependent on technology, be it mechanical, electronic, or otherwise. The continued development of new technologies and the training of current and future pilots to use them is thereby only a natural, evolutionary course of development.

Inputs	Outputs		Outcomes		
	Activities	Participation	Short	Medium	Long

Inputs:
- Mobile Technology Hardware (Tablets, Smartphones, GPS devices)
- Mobile Technology Software (ForeFlight, FlyQ, WingX, FlightAware)
- Traditional Training Resources (E6B flight computer, aeronautical charts)
- Ground and flight instructors
- Flight simulation technology

Outputs — Activities:
- Ground school classes include the use of traditional training resources
- Ground school classes include equivalent procedures using new technologies
- Flight training includes the use of traditional and "glass cockpit" instrumentation
- Flight simulators provide realistic and economical training alternatives

Outputs — Participation:
- Students consult established sources of information
- Students conduct equivalent procedures using old and new tech
- Flight training becomes increasingly accessible

Outcomes — Short:
- Student pilots have access to all required information for safe decision-making
- Student pilots direct their attention efficiently
- Instructors are proficient with emerging technologies
- Student pilots master essential skills with increased efficiency

Outcomes — Medium:
- Pilots conduct themselves in a safe manner
- Emerging tech continues to enhance the capabilites of pilots and aircraft
- Tech developers respond to continuous input from the aviation community

Outcomes — Long:
- Aviation continues to be a hobby/industry open to an increasing number of people

Assumptions: The ability of pilots to make use of relevent emerging technologies is as important as understanding the established fundamental mechanical, electronic, and natural systems addressed in flight instruction.

External Factors: The continuous development of new technologies useful in aviation; the increasing familiarity of trainees with mobile technologies; the enhanced abilities technologies afford humans

Assignment 1: Project Description

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Please describe the initiative/project you would like to evaluate (preferably one that involves instructional technology).

Aviation is among the many industries revolutionized by mobile technology, with applications such as ForeFlight, FlyQ, and WingX changing the way pilots train and maintain proficiency. Ground and flight instruction are increasingly utilizing these and other technologies. While training still requires 'old-school' skills (plotting courses on paper charts, using the E6B flight computer, and figuring weight and balance tables), it is undeniable that flight is an industry/hobby inherently dependent on technology, be it mechanical, electronic, or otherwise. The continued development of new technologies and the training of current and future pilots to use them is thereby only a natural, evolutionary course of development.

Also, for each item below, please indicate what is true for this project.

1. Context:
   - ☐ District
   - ☐ School
   - ☐ Grade-Level
   - ☐ Content-Area
   - ☐ Classroom

2. Focus:
   - ☐ Technology
   - ☐ Media
   - ☐ Science
   - ☐ Social Studies
   - ☐ English/LA
   - ☐ Math

3. Type of project:
   - ☐ Grant-funded
   - ☐ LEA/Administrative Mandate
   - ☐ School Initiative

4. Participants:
   - ☐ Central Office Staff (Govt/FAA)
   - ☐ School Staff (instructors)
   - ☐ Students
   - ☐ Parents