Guideline for Establishing A National Cyber Security Ambassador Program for Children

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1. Purpose

This guideline has been prepared to assist entities or national bodies to plan, design, and execute an effective cyber security ambassador program for schools.

This guideline intends to achieve the following:

a. Provide guidance to entities and national bodies planning a cyber security ambassador program for schools
b. Provide the needed toolkits to be used in planning, designing, or executing the cyber security ambassador program
c. Provide the foundational content that can be used as a reference to design and develop the full content for the program

2. Overview

The cyber security ambassador program is designed to empower selected students to assist in raising awareness about the security threats and risks faced by different segments of society. This program can be implemented by any school. It is recommended that a national body or organization with credibility in both educational and cyber security sectors takes ownership or sponsors the program. The program can also be managed or organized by multiple entities depending on the selected scope for the program.

3. Guideline Scope

This guideline can be used for establishing the below program:

a. A cyber security ambassador program for schools

This guideline consists of a set of best practices that can be followed to plan, design, and execute such programs. This guideline can also be used by national bodies such as Computer Emergency Response Teams (CERTs) to coordinate with schools and execute the cyber security ambassador program

This guideline also includes accompanying toolkits and sample content. Provided toolkits and templates can be found under Annex A of this guideline.

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4. Program overview

- Selecting the Program Scope
- Identifying Program Stakeholders
- Defining Program Objectives
- Selecting a Rewarding Scheme
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- Defining Competency Metrics

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- Evaluating the Program
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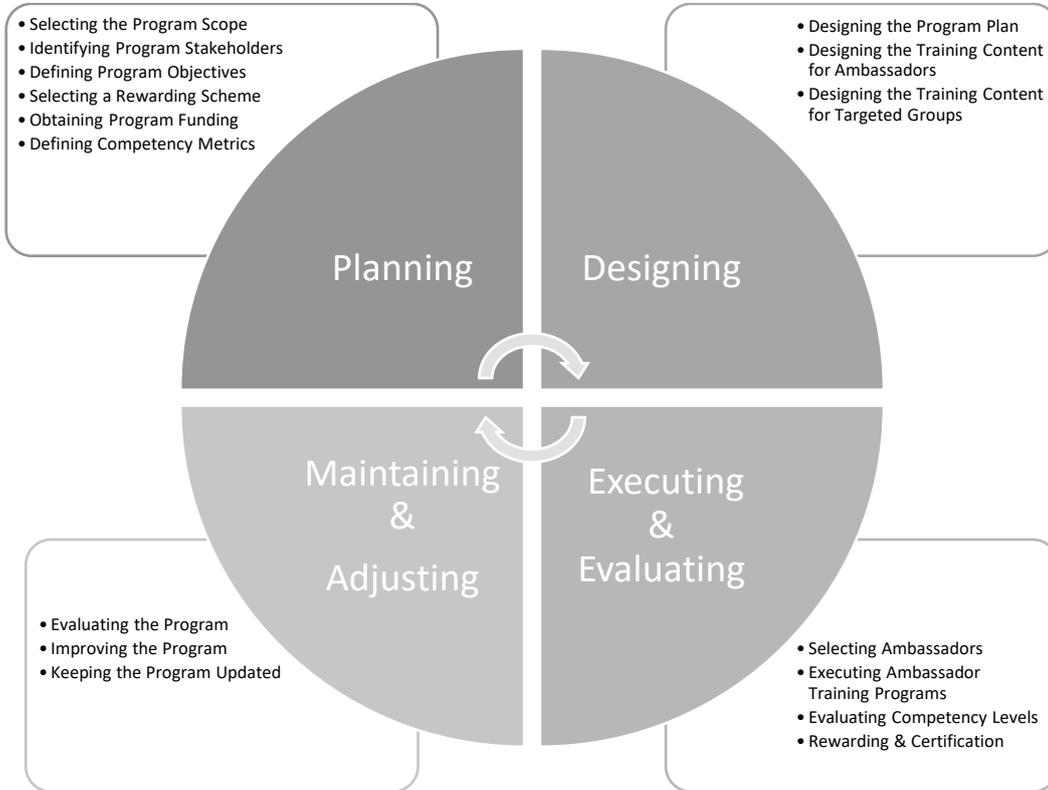- Rewarding & Certification

Diagram 1 - Program Overview

5. Program Planning

5.1 <u>Selecting the Program Scope</u>

When selecting the program scope, keep the targeted audience in mind that will be educated by the ambassadors. The scope selection can be based on age, gender, location, language, nationality, etc. When selecting a scope, the limitations of the ambassadors must be considered. The selection of scope will directly impact the criteria for selecting ambassadors. For example, if the agency or entity decides to run a campaign across a region, travel accommodations must be provided for the students who have been selected as champions to travel across the region.

a. Implementation guidance:

The following questions should be asked to ease the scope selection:
- o Who are we trying to educate?
- o Can we specify the age, language, location of the selected audience?
- o Can we quantify the selected audience?
- o What are our constraints if we target these people in terms of language or location or program execution time?
- o Is it easy to measure the understanding of the selected audience?
- o Are we authorized to educate the selected audience?
- o Do we have the needed funding for running a program for the selected scope?

Based on the answers of these questions, a clear scope should be selected with boundaries and exclusions if any.

b. Working Example:

The following questions should be asked to ease the scope selection:

- o Who are we trying to educate? ***School Students***
- o Can we specify the age, gender, language, occupation or location of the selected audience? ***Yes, we are targeting all male and female students from the ages of 12 to 18 studying in private schools across the UAE.***
- o Can we quantify the selected audience? ***Yes, according to the numbers provided by authorities, currently there are more than 20000 students that meet the selected criteria.***
- o What are our constraints if we target these people in terms of language or location or program execution time? ***We will need ambassadors across the seven emirates and we will need both Arabic and English speakers***
- o Is it easy to measure the understanding of the selected audience? ***Yes, multiple methods can be used such as assessments or quizzes.***

o Are we authorized to educate the selected audience? ***No, we will need to include the Ministry of Education as one of the key stakeholders to assist during the execution of the program.***
o Do we have the needed funding for running a program with this selected scope? ***Yes, the fund has been allocated to educate the selected scope.***

Selected program scope "20000 male and female students from the ages of 12 to 18 studying in private schools across the UAE and all other students will be educated later in the next phases of the program".

c. More information:

In this phase, the selected scope is for the targeted audience and not the ambassadors. The details of the scope might change during the next steps of the program planning based on obstacles and limitations that might be identified after identifying all key stakeholders and conducting the brainstorming session.

5.2 Identifying program stakeholders

The program stakeholders must be identified based on the selected scope to ensure that all needed resources will be available to run the program successfully. Keep any dependencies in mind and address all expectations from stakeholders. It is highly recommended to establish a team or committee to run and oversee the program until it is launched and running successfully. The team should consist of expert trainers, marketing and promotional experts, and cyber security experts.

The trainers should be qualified to train the ambassadors not only on the cyber security subject but also on soft skills to ensure that they can deliver the message in an effective manner. The marketing and promotional experts will manage the marketing side of the program to ensure participation of the targeted audience and building national interest in the program.

a. Implementation guidance:

Select the stakeholders based on the program scope and define their roles, responsibilities, and authorities.

If the program scope covers a school, then it might include the following stakeholders:
o Authorities
o Expert trainers
o Schools

b. Working Example:

Examples of stakeholders of an ambassador program targeting male and female students in private schools across the UAE:

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Stakeholder	Role	Responsibilities	Authorities
Ministry of Education	Program Sponsor	• Overlook the program and provide input • Provide needed support to ensure the success of the program such as the list of schools, number of students, authorized letters for trainers to enter schools, etc.	Approve the program plan and objectives
aeCERT Management	Program Sponsors	• Monitor the program success • Provide feedback • Provide all needed support	Approve the program plan, objectives, and budget
aeCERT operations team	Program Owners	• Plan, design, execute the full program • Train ambassadors • Evaluate the effectiveness of the program and report the results to aeCERT management and Ministry of Education	Approve the content
Private schools	Program Assistant	• Assist in running the program in their schools	None
Marketing representative in TRA	Program Assistant	• Assist in marketing and promoting the program to encourage participation across private schools in the UAE	None
External trainer or expert	Program Assistant	• Assist aeCERT in planning, designing, and executing the program • Assist in evaluating the success of the program and enhancing the program • Assist ambassadors in doping personal research about cyber security • Assist in training the selected ambassadors	None

Table 1 - Stakeholders for a program targeting students in private schools in the UAE

c. More information:

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The provided examples in the previous section are by no means exclusive. The stakeholders will differ depending on the selected program scope. One key stakeholder that will be added in the designing phase of the program are the ambassadors themselves. Ambassadors are the backbone of the program and it is vital to clearly identify their roles, responsibilities, and authorities.

5.3 Defining program objectives

Based on the chosen scope, the program owner should define clear program objectives. The objectives should be specific, measurable, achievable, realistic, and timebound (SMART). The objectives must be reviewed and approved by the program owner(s). All other authorized stakeholders must endorse the objectives and provide input if needed. The program owner(s) must define key performance indicators to monitor the success of the program. The review cycle of the objectives must be agreed in the planning phase of the program among all stakeholders.

a. Implementation guidance:

Ask the below questions to ensure identifying SMART objectives:

- What is our program scope?
- How many people can we target in the selected scope?
- How long will it take us to educate the entire targeted audience?
- What are our mechanisms for evaluating the success of the program?
- Is the program linked to any other programs or KPIs?
- Can we link this program objectives to any objectives resulting from any regulations or standards?
- Can we link this program objective to business objectives?

b. Working Example:

An example of objectives for a program targeting students in private schools in the UAE:

- What is our program scope? ***Male and female students from the ages of 12 to 18 studying in private schools across the UAE and all other students will be educated later in the next phases of the program (this will be an output of the scoping activity)***
- How many people can we target in the selected scope? ***All 20000 students in all seven emirates***
- How many ambassadors will be needed to educate all people in scope? ***50 ambassadors***
- How long will it take us to educate the entire targeted audience? ***Two years***
- What are our mechanisms for evaluating the success of the program? ***Quizzes and simulations***

- Is the program linked to any other programs or KPIs? *This is part of the overall national cyber security strategy*
- Can we link this program objectives to any objectives resulting from any regulations or standards? *There are KPIs defined for aeCERT that mandate educating students across the UAE and raising awareness across the country*
- Can we link this program objective to business objectives? *Yes, this is linked to aeCERT's goal of enhancing information security awareness across the UAE.*

Sample objective:

Objective	Key Performance Indicators	Metrics	Success Rate
Train fifty (50) ambassadors to educate 20,000 male and female students between the ages of 12 to 18 in private schools across the UAE by the end of 2021.	• Percentage (%) of selected ambassadors attending all training sessions	• Attendance records of training sessions conducted to train ambassadors	0% - 50% (Not Acceptable) 51% - 80% (Acceptable) 81% - 100% (Successful)
	• Percentage (%) of targeted group educated by ambassadors	• Attendance records of sessions conducted by ambassadors over the year	0% - 50% (Not Acceptable) 51% - 80% (Acceptable) 81% - 100% (Successful)
	• Percentage (%) of ambassadors achieving 80% or above on all ambassador assessments	• Assessment results	0% - 50% (Not Acceptable) 51% - 80% (Acceptable) 81% - 100% (Successful)

Table 2 – Sample objective and KPIs for an ambassador program targeting students in private schools across the UAE

c. More information:

Program sponsors and owners might define more than one objective for the program. Objectives must be closely monitored after the execution of the program and the progress should be recorded to ensure that performance targets are met. In case, the program is not progressing as intended, the program sponsors and owners must make modifications to ensure that targets will be achieved by the specified deadline.

5.4 Selecting a Rewarding Scheme

In order to encourage students participating in the program, the program sponsor and owners must agree on a rewarding scheme for these students acting as ambassadors. Selected rewards should be valuable and attractive for the chosen students. It is recommended to have a rewarding scheme that is scalable to encourage continuity within the program.

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a. Implementation guidance:

Below is a list of suggested rewards and prizes for the ambassadors:
- o Certificates after completing each level of the program
- o Financial rewards
- o Educational trips
- o Valuable gifts such as gadgets

b. More information:

Recognition is a strong motivator for ambassadors to continue with the program. Successful rewarding schemes can be bundled with recognition programs and events.

5.5 Program Funding

Funding is a key element in any program. The amount and type of funding might differ from program to another based on the selected scope and capabilities of the program owners.

a. Implementation guidance:

Ask the below questions to identify the needed budget and funding:

- o Do we need to book any external training venue(s)?
- o Do we need assistance from external experts/trainers/consultants to run train ambassadors?
- o Do we need external assistance for the development of the training content to train the ambassadors?
- o Do we need external assistance for the development of the educational material that will be used by the ambassadors to train others?
- o Do we need to develop any digital material such as videos, posters, flyers, etc.?
- o Do we need any promotional or marketing material for the program?
- o Do we need a budget for any other logistics such as photographers or speakers, etc.?
- o Do we need a budget for gifts or awards for attendees or ambassadors?

b. More information:

The funding and budgeting sheet will be fully completed by the end of the planning phase. It might be difficult to come up with the exactly needed budget at this stage. External trainers and vendors should be consulted for program budgeting by requesting quotes for needed services.

5.6 Competency Metrics

The success of the program is fully dependent on the competency of the chosen and trained students. However, even after completing the first set of training, assessment results might address certain weaknesses among some of the students. Therefore, the program should be designed in a way to allow all students to mature over time. Some students might choose to move to more advanced levels of educating others and even participating in international events as speakers. Any selected competency matrix should cover at least subject-knowledge and soft skills.

a. Implementation guidance:

Develop a competency matrix that can be used to evaluate the competency of the students and provide a roadmap for achieving the highest level of competency. The competency of all students must be evaluated before starting the training and must be compared with the results of the competency evaluation after the training. This can also be a good indication of the effectiveness and success of the program.

The competency evaluation can include:
- Written exams/questionnaires
- Verbal assessments
- Training mockups where ambassadors are requested to prepare and present any subject to evaluate their soft skills

b. Working Example:

Competency Level	Description	Evaluation Metrics
Selected as an Ambassador (Level 0 Ambassador)	• Fulfills the high-level competency requirements to be an ambassador	• Fulfills the high-level competency requirements to be an ambassador
Beginner (Level 1 Ambassador)	• Completed the first set of training and evaluation successfully • Has basic knowledge about information security best practices • Has acceptable presentation skills • Can design basic training content in PowerPoint	• Scored 80% or more on level 1 written assessment • Achieved between 50% - 70% score on the verbal assessment • Achieved between 50% - 70% score on presentation skills assessment • Achieved between 50% - 70% score on content development
Intermediate (Level 2 Ambassador)	• Completed the first set of training and evaluation successfully and has completed at least one training for an audience ranging from 50 to 100 individuals.	• Scored 80% or more on level 2 written assessment • Achieved between 71% - 80% score on the verbal assessment

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	• Has good knowledge about information security best practices • Has good presentation skills • Can design intermediate level training content in PowerPoint or any other tools	• Achieved between 71% - 80% score on presentation skills assessment • Achieved between 71% - 80% score on content development
Expert (Level 3 Ambassador)	• Completed the first set of training and evaluation successfully and has completed at least one training for an audience of 100 individuals or more. • Has expert knowledge about information security best practices • Has excellent presentation skills • Can design advanced level training content in PowerPoint or any other tools	• Scored 80% or more score on level 3 written assessment • Achieved more than 81% score on the verbal assessment • Achieved more than 81% score on presentation skills assessment • Achieved more than 81% score on content development

Table 3 – Sample competency metrics for ambassadors

c. More Information:

Any student fulfilling the high-level competency criteria as part of level 0 but not meeting the required success metrics for level 1 must not be sent to train others and must be trained again until they reach the desired level. Program sponsors and owners might decide to have more levels or different ways to evaluate the competency based on the size and nature of the program.

6. Program Designing

6.1 Designing the Program Plan

When designing the program, it is essential to start with a detailed program plan. Keep in mind what needs to be designed, by whom, and when. The program plan should include the full program rollout plan and timeline.

a. Implementation guidance:

The program plan should include the time allocated for content review and approvals as well as the time for obtaining other approvals from authorities if any. It is very important to allocate enough time for executing the program and training the ambassadors.

The program plan should at a minimum include the following information:
1. Every phase with delivery dates
2. Responsibilities during execution
3. The objective of every phase or activity

4. The execution method of each activity

c. More information

Any program can fail if enough time is not dedicated to training the ambassadors, then the ambassadors will fail at the assessment and won't achieve the competency level requirements needed to start the program.

6.2 Designing the Training Content for Ambassadors

The content must be suitable for the selected ambassadors in terms of language and tone. The content should be developed after the first set of competency assessment that is carried out after selecting the ambassadors.

a. Implementation guidance:

The content should include the below content:

o Introduction content about the program, program objectives, and KPIs
o The responsibilities of the ambassadors
o Soft skills training
o Content development training
o Training on tools such as PowerPoint
o Cyber security training

b. Working Example:

The content for educating students should:

o Be simple and easy to understand
o Focus on issues and risks faced by students at schools

c. More information

The content should be developed for each level of the program in a simplistic way. Expert trainers should be consulted to ensure using the most effective instructional methods to educate the selected ambassadors. For example, using visuals might be the best way to educate young ambassadors.

6.3 Designing the Training Content for Targeted Group

Ambassadors cannot carry out their tasks without any content. Ambassadors should be trained on the content that they will use to educate others at least for level 1 ambassadors. Ambassadors at level 2 or 3 might have the capabilities of creating content themselves.

a. Implementation guidance:

The content should include relevant and recent examples. The content should be engaging and interactive. It should include examples and stories that are very relatable. If more detailed notes or guidelines are needed, these can be developed for the ambassadors to use during the session. The ambassadors should be aided with all needed visuals, videos, posters, and other supporting material to ensure the success of all conducted trainings. It is recommended to show the developed content to a few selected individuals from the targeted audience to get feedback on the material before rolling it out.

b. Working Example:

The content can differ based on the targeted audience and can include topics such as:

- Password security
- Social media security
- Social engineering scams
- Phishing scams
- Email security
- Mobile security
- Etc.

c. More information

To ensure quality control of the developed material, program owners must review all content developed by ambassadors before presenting it to the targeted audience.

7. Program Execution & Evaluation

7.1 Selecting Ambassadors

The ambassador selection process should be carried out with care. As discussed in the previous sections of this guideline, the chosen ambassadors should fulfill the capabilities and pre-defined requirements that are necessary to achieve the defined objectives. It is proven to be effective when the chosen ambassadors are part of the targeted scope. Following the Peer Teaching model, students can be selected as ambassadors to educate other students.

b. Implementation guidance:

The pre-defined requirements for the ambassadors might include the following:

o Knowing a certain language
o Being a certain gender
o Being a certain age
o Being from a certain nationality

c. Working Example:

In the example of the ambassador program for private schools, the chosen ambassador should:

- Live in the UAE
- Be in the age between 12 to 18
- Speak English
- Be a student

d. More information

After selecting the ambassadors, their responsibilities should be clearly defined as part of the program planning and communicated to them prior to starting any training. The main responsibility of any cyber security ambassador is to raise awareness and educate others, however, program sponsors and owners might want to add additional responsibilities for the ambassadors. It is recommended to start with minimum responsibilities and add more as ambassadors grow within the program.

7.2 Execution of Ambassador Training Programs

The program owners should select suitable awareness methods based on all collected information in previous phases and as addressed in the plan to carry out the training.

a. Implementation guidance:

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The ambassador training program will start with the execution of the first batch of assessments to evaluate the competency of the selected ambassadors. Followed by dedicated training to cover all sessions.

The training should include:

o   Sessions
o   Discussions
o   Activities
o   Etc.

b. Working Example:

The trainer can start by giving sessions explaining the program and key concepts. Various activities must be part of the program such as panel discussions, debates, and group activities to ensure engaging the ambassadors and improving their skills. Moreover, the training should include training the ambassadors on content development using common tools such as PowerPoint or Prezi. The ambassadors should be given a chance to practice presenting the material and the instructor must give feedback and provide guidance on key weaknesses that need improvement.

c. More information

Training might be repeated, and more activities might be needed based on the level of the ambassadors. Some ambassadors might even need one-on-one training to understand the material. Some training sessions might go for hours and others for the full day based on the availability of the ambassadors.

7.3 Competency Evaluation

The competency of ambassadors should be evaluated after every training and compared to the first assessment and record improvements and deviations.

a. Implementation guidance:

The same methods for competency evaluation should be followed to assess the understanding and learning progress of ambassadors. Training content might need modification based on the results of the assessments.

a. More information

By the end of the training period allocated to train ambassadors, program sponsors and owners should evaluate the results of the assessments and select the ambassadors that are ready to start conducting the sessions and educating others. Others should be trained again or simply dropped from the ambassador program.

7.4 Rewarding & Certification

After evaluating the competency of the ambassadors, they should all be rewarded for being part of the program.

b. Implementation guidance:

A rewarding and certification scheme should be developed for the program to ensure encouraging the students to be part of the program and continue training others as ambassadors. The students completing the program successfully should be certified officially as ambassadors.

a. More information

All students participating in the program should be rewarded regardless of the results of the assessment.

8. Program Maintaining and Adjusting

8.1 Post-Ambassador Training

Once the training program is completed for ambassadors, the program can move to the second execution level which is to use ambassadors to educate the targeted group.

b. Implementation guidance:

Assessments should be used to assess the level of the understanding of targeted groups educated by ambassadors to ensure that the program is running successfully. Pre- and post-assessments can be used to measure the level of awareness of the targeted groups before and after attending the sessions conducted by ambassadors. These assessments can include exams or quizzes based on the training material developed for the targeted groups. Feedback forms should also be used to enhance the content of the program carried out by ambassadors.

To ensure effective maintenance of the program, the program owner should:

- Provide the students with a contact that they could reach out to if they have any queries about the content. That could be a teacher within the school or an expert trainee working for the program owner.
- Develop a method of rewarding the most active ambassador based on selected KPIs
- Promote and present the program through social media channels showcasing the ambassadors to the society as role models
- Promote the program in other schools
- Gather the ambassadors yearly or several times a year, to exchange ideas, share their experience, and discuss challenges

- Provide the ambassadors with a communication channel to give feedback about the program to the program owner directly

c. More information:

The success criteria for any cyber security ambassador program does not solely depend on the competency of the ambassadors, but it also depends on the results of any sessions conducted by them. The impact of the ambassador program will not only affect the ambassadors but also the selected scope.

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Annex A

Attached Toolkit

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