***Project Narrative – Technical Content***

*[This section must be no more than 15 pages in length. Pages should be numbered consecutively beginning with the first page of this section numbered as "1."*

*All references or citations must be included within this 15-page section. References and citations outside of the 15-page section will not be considered.*

*All figures, charts, graphs, tables, or screen shots (outside of what is requested in the Appendices) must be included in this 15-page section. Figures, charts, graphs, tables, or screen shots outside of the 15-page section that are not requested in the Appendices will not be considered.*

***a. Page and margin specifications***

*For the purpose of proposals submitted under this solicitation, a “page” is 8.5 inches x 11 inches, with 1 inch margins at the top, bottom, and both sides.*

***b. Spacing***

*Single space all text in the proposal narrative, including titles, headings, footnotes, quotations, references, and captions, as well as all text in charts, tables, figures, and graphs.*

***c. Type specifications (font specifications)***

*Type must conform to the following requirements:*

* *The height of the letters must not be smaller than 12 point.*
* *Type density, including characters and spaces, should be no more than 15 characters per inch (cpi). For proportional spacing, the average for any representative section of text should not exceed 15 cpi.*
* *Type size must yield no more than 6 lines of type within a vertical inch.*
* *Standard black type must be used for text to permit photocopying.*
* *Offerors must check the type size using a standard device for measuring type size, rather than relying on the font selected for a particular word processing/printer combination. ]*

**1. Significance**

**a. Problem**

*[Describe the education problem (including its scope) that the proposed product is intended to address and justify the importance of investing in R/R&D to solve this problem.]*

As educators, parents have the next level of influence over their children’s education second to teachers. As guardians, parents are affected the most when their children don’t get a god education and don’t succeed in school. However when it comes to current Education Technology and Learning Management Systems, solutions are centered mostly schools, teachers or student’s needs, leaving parents out of the loop. Remember, parents have the most to lose when their children don’t succeed in school. This lack of information puts parents at a disadvantage when they study with their children because they have to spend valuable time looking for class information and interpreting educational materials in order to effectively help their kids with their homework. In many cases, this results in wasted time and increased stress for the parents and a frustrating learning experience for the students.

When it comes to academic performance, US students are falling behind[[1]](#footnote-1) and the consequences are serious, because not only it will affect the quality of life of our citizens but also the prosperity of our nation. Changing the educational system is a herculean task, one that we would simply not be able to accomplish with this project. However we can make a dent in the problem by providing parents with the tools and information that they need to empower parents to be better educators at home. By helping parents be more engaged in their children education and provide a positive educational experience at home, we will help them create lifelong learners, who will have a better chance at doing well in school and succeeding in life. This is why it is extremely important to invest in R&D to solve this problem.

**b. The product, its implementation, and the intended outcomes***[Describe the product that would be fully developed, after the Phase I and Phase II projects are completed.*

*In this description:*

* *Specify the intended user of this product (e.g., middle school social studies students, high school chemistry teachers, parents of preschool children with autism, principal, school technology coordinator).*

Our product is intended to be used by elementary school teachers, students and their parents. Educators (Teachers and/or parents) will post homework or study related information. This information will be automatically classified, organized and shared so that all the classroom students (and their parents) can have it at the time they sit down to do their homework.

Parents will in turn be able to engage in conversations with teachers and other parents to clarify questions and share educational resources useful for the understanding of the concepts and to complete the homework. The information shared will be available to other parents and students so that they can also benefit from it.

* *Describe the critical components of this product and any additional materials required to support implementation (e.g., handbooks).*
* The critical components for this services are:
  + Clients Applications:
    - Mobile App: A small form factor client enabling user interaction via smart phones.
    - Web App: A large factor client enabling user interaction via large form mobile devices and personal computers.
  + Cloud Components:
    - Messaging: enables communication among service users.
    - Notifications: informs users about new information or relevant events.
    - Information Management: storage, retrieval, classification and organization of shared information.
    - Entity Management: management of information entities handled by the system: users, schools, classrooms, subjects.
    - Social calendar: organizes events based on their due dates while providing social networking features to enable collaboration among users.
* *Specify the platform on which this product will operate (e.g., desktop, tablet, or smart phone). Specify whether this product will stand-alone or whether it will function by integrating with an existing technological system. Describe how this product will function once completed.*

Our product will operate in desktops, tablets and smartphones. It is intended to stand alone, however it will support integrations with existing learning management systems either through published API’s or email connectors.

Users are expected to use the system including, but not limited to, the following interactions:

* Downloading and installing the mobile app.
* Enrolling in the system.
* Configuring the educational context (school, classroom, subjects, etc).
* Teachers and or parents post homework or educational information. The system automatically classifies and organizes information in the form of to-do lists or social online calendars to facilitate access.
* Students and/or their parents access the information in preparation for their homework or while doing their homework.
* Parents collaborate with other parents in context-based conversations (by homework, subject, etc.) to clarify doubts, share educational resources (such as educational sites, applications or review material). Teachers may also contribute if desired.
* Teachers and or parents answer posted questions based on their knowledge.
* *Describe how this product would be implemented in the intended authentic education setting (e.g., classroom, guidance counselor office, after school program) or authentic early intervention or special education setting (e.g., special education classroom, supplemental education service, home setting for students with or at risk for disabilities). For example, would this product replace, supplement, or be integrated within existing practices? Would the product alter typical instructional approaches or administrator practices?*

Our product supplements and can be integrated with existing practices. It has the potential to enhance typical administrator practices in terms of interactions among –teachers, students and parents.

Users interact with our service either through their mobile apps or the web interface. Because this is a cloud based solution, there is no need to install any software neither in the school servers, nor in the school computers or educational setting computers. However, in order to take advantage of the features offered for mobile clients, users can download the mobile app which will give them access to features specifically designed for a mobile environment.

* *Describe the expected level of resources (e.g., time, funds, schedules, equipment) needed to implement and use the product. Discuss why this product’s implementation will be feasible for users given their resource constraints.*

In terms of schedule and deliverables, we expect to have a six month development cycle using the Scrum development methodology. This this development cycle we intend to deliver six product increments, meeting the goals specified in the table below.

|  |  |  |
| --- | --- | --- |
| **Product Increment #** | **Weeks** | **Product Increment Goal** |
| 1 | 1 to 4 | Skeleton Web & Mobile Apps Registration and Context configuration |
| 2 | 5 to 9 | Post homework information One to one messaging |
| 3 | 10 to 13 | Automatic information classification and organization Group messaging |
| 4 | 14 to 17 | Online Educational Calendar Social Networking |
| 5 | 19 to 22 | Mobile Alerts & Notifications Document and multi-media attachments. |
| 6 | 23 to 26 | **School Pilot #1** Application adopted by 1 school. Used by 2 teachers, 12 parents and 6 students in one classroom (at a minimum). |

In terms of human resources, our project team will consist of a Scrum Team, a Support Team and an Advisory Team. Our Scrum Team will handle the design and implementation of our product, our Support Team will handle non-development support activities, and our Advisory Team will provide guidance to ensure that we properly address our users’ needs and introduce us to contacts that can facilitate the adoption of our product.

|  |  |
| --- | --- |
| **1. Scrum Team** |  |
| ***Product Owner*** | Interacts with end users and advisory board to uncover valuable features to include in our product. Maintains a prioritized list of features to be implemented by the Scrum Development Team. |
| ***Scrum Master*** | Plans and schedules feature implementation. Removes roadblocks. |
| ***UX Designer*** | Designs user experience for our application. |
| ***Web App Developer*** | Designs and implements the web-based clients. |
| ***Mobile App Developer*** | Designs and implements the mobile app clients |
| ***Cloud Developer*** | Designs and implements the back end and cloud based components of our solution. |
| **2. Support Team** |  |
| ***Administrative Assistant*** | Handles scheduling and coordination of activities. Executes non-critical administrative tasks. |
| **3. Advisory Team** |  |
| ***Public School Representative(s)*** | Ensures that our product includes features of value to public schools and provides venues for the adoption of product. |
| ***Private School Representative(s)*** | Ensures that our product includes features of value to private schools and provides venues for the adoption of product. |
| ***Teacher Representative(s)*** | Ensures that our product includes features of value to teachers and provides venues for the adoption of product. |
| ***Parent Representative(s)*** | Ensures that our product includes features of value to parents. |
| ***Student Representative(s)*** | Ensures that our product includes features of value to students. |
| ***Legal Representative(s)*** | Ensures that our product is in compliance with applicable laws. |

In terms of funds, we will need $150,000, which we intend to use as outlined in the following table.

|  |  |
| --- | --- |
| **Salaries** | $137,800 |
| **Equipment, Software & Hosting** | 6700 |
| **Operational Fees** | 5500 |
| **Total** | $150,000 |

Implementation this application is completely feasible for our users since it doesn’t require special resources. Being a cloud and mobile based solution, users don’t require any special devices to use it and they can use their existing ones. All they need is a computer with a standard browser, or for a richer mobile experience, they can install a mobile application client which during phase 1 we intend to make available for Android and iOS through a mobile enhanced web interface.

* *Specify the intended outcomes that are expected to result from the product’s use (e.g., improving student vocabulary or understanding of the causes of the Civil War, teacher instruction or reducing student problem behavior, teacher time spent on administrative tasks, improving the selection of learning apps that a technology coordinator introduces to teachers to supplement instructional practice).]*
* As a result of using this product, teachers will spend less time documenting and sharing homework information, engaging in communications with parents and students and be able to spend more time researching and sharing information on apps or resources that can improve the learning of classroom concepts; parents will be better informed about their children’s homework and will have the timely and relevant information they need in order to help their children; students will have a better education experience at home, will be more engaged in their studies (hence reducing problem behavior) and will perform better in school.

**c. The theory of change, and theoretical and empirical support**

*[Describe your underlying arguments for how this product will lead to its intended outcomes. Include the sequence of steps through which the product will lead to both proximal (e.g., near-term) and distal (e.g., longer-term) outcomes. Provide theoretical and empirical evidence in support of the product’s intended operation, e.g., answer such questions as how is the product grounded and supported by theory and what data from past studies show that this product, or its components, can be expected to produce the intended outcomes.*

*Describe your underlying arguments for how this product will lead to its intended outcomes.*

Research demonstrates that parent involvement significantly helps their children perform better academically and socially[[2]](#footnote-2)[[3]](#footnote-3), this impact is demonstrated through[[4]](#footnote-4):

|  |  |
| --- | --- |
| * Higher grades and test scores * Greater engagement in school work * Greater sense of personal competence and efficacy for learning * Increased social capital | * Better adaptation to school * Better social skills and improved behavior * Lower drop-out & higher graduation rates * Enrolment in higher level programs & advanced classes |

*Proximal (short term) Outcomes*

Our product’s primary goal is to increase parent’s involvement in their children education and, in the short term, help their children get higher grades and test scores.

*Sequence of steps through which the product will lead to Proximal (short term) Outcomes*

The following steps show how our product supports the achievement of our short term goal.

1. Teachers (or parents) post homework or school work information using our mobile application.
2. Our product automatically classifies and organizes the information posted and then sends a notification to the parents with a summary of the homework or school work information.
3. The classroom parents receive the new homework notification. After reviewing it…
   1. If there is something required to do the school work (such as buying materials, obtaining resources, printouts, etc.) they can do it beforehand.
   2. If there is something that needs clarification, they can initiate a conversation that may involve the teacher or other parents to get the information needed.
   3. Decide to do nothing at the time, knowing that they information they need to help their children with homework will be easily available to use when they have time to help their children with their school work.
4. While preparing to help their children with their homework, parents open our mobile application and get a list of upcoming due homework. They use this list in order to guide their children on what to do first, next, etc. They can also initiate a new, or monitor an existing conversation to get clarification on what needs to be done or share resources that can help other children with their homework. These may include links to other web sites, documents or other digital resources.

*Distal (long term) Outcomes*

Long term, we want to help children improve their efficacy for learning, become more engaged in their school work and achieve a greater sense of competence in the subjects of study.

*Sequence of steps through which the product will lead to Distal (long term) Outcomes*

The following steps show how our product supports the achievement of our long term goals.

1. Parents or teachers, show children the value of the application in terms of how it can help them do homework on their own.
2. While preparing to do their homework, students open our mobile application and get a list of upcoming due homework. They use this list in order to know what to do first, next, etc. They can also initiate a new, or monitor an existing conversation to get clarification on what needs to be done or share resources that can help other students with their homework. These may include links to other web sites, documents or other digital resources.
3. Students can initiate conversations on how to go about solving a problem or completing their homework. Other students can participate and contribute with their knowledge.

*Explain the theoretical and empirical basis for the product in sufficient detail so that reviewers will understand the reasoning behind this product. It is often helpful to include a diagram that shows how the product will lead to improvements in student or teacher performance. This diagram should distinguish between proximal and distal education outcomes. For instance, a product designed to help students learn statistics may begin by teaching students how to calculate the batting average of a baseball player, as a foundation for more complex statistical analyses predicting future batting average based on past performance. In turn, the perceived relevance of the material may lead students to devote more time to studying the subject, which in turn may lead to improved test scores in statistics. This logical sequence is referred to as a Theory of Change.*

*For products designed to directly affect the teaching and learning environment or administrators, and, thereby, indirectly affect student outcomes, offerors should clearly specify in the theory of change the proximal outcomes that this product is designed to affect (e.g., teacher practices) and how the proximal outcomes are intended to impact distal student outcomes.]*

So far we have talked about how our product will help us reach our short and long term goals in terms of the impact for parents and students. However we also believe that our product will have a positive impact in the teachers’ performance since they will have a tool that they can use to communicate information in real time to parents and students and they can submit this information in a very short amount of time.

The following steps show how our product supports that.

1. Teachers post homework or school work information using our mobile application.
   1. They won’t have to spend a lot of time crafting and posting the homework information. Instead of having to sit down at their desk, filling out a cumbersome form and submitting the homework information using a school (or personal) computer, they will be able to simply post the homework information through the mobile app in the form of a tweet (using handles to specify contextual information) which the system can then classify and organize automatically.
   2. They can also take a picture of a resource (notes from the blackboard, etc.) and include it as an attachment.

We also believe that our product will have a positive impact in simplifying communications between the school administrators and parents, since they too could use it to send messages to whole groups at once, like parents or students in a certain classroom or staff.

1. School administrators post a message to users our mobile application or web application.
   1. Administrators will be able to simply post a message in the form of a tweet (using handles to specify contextual information) which the system can then classify and organize automatically.
   2. They can also take a picture of a resource and include it as an attachment.

**d. Related R/R&D by the project team**

*[Describe whether the proposal is:*

*i. to develop an entirely new product,*

*ii. to develop and add new and unique components to a prototype that already exists and is functioning, or*

*iii. to develop and add new and unique components to a product that is already fully developed*

*Describe previous R/R&D conducted by the project team that is directly related to the proposed product. Describe how this previous R/R&D guides and provides a foundation for the proposed effort.*

*i. For proposals to develop an entirely new product where no (or limited) previous technological development work has occurred, the offeror may include results from concept testing where users (e.g., students, teachers, service providers, administrators) provide feedback after viewing mock-ups detailing the proposed product and its intended implementation.*

*ii. For proposals to develop and add new and unique components to a prototype that already exists and is functioning, the offeror (1) must detail prior research on the current prototype’s usability and initial feasibility and (2) may include results from concept testing where users (e.g., students, teachers, service providers, administrators) provide feedback after viewing mock-ups detailing the proposed product and its intended implementation.*

*iii. For proposals to develop and add new and unique components to a product that is already fully developed, the offeror (1) must justify the need for the additional components, (2) must detail prior research on the existing product, including usability, feasibility, fidelity of implementation, and evidence that the product in its current form shows promise for improving outcomes, and (3) may include results from concept testing where users (e.g., students, teachers, service providers, administrators) provide feedback after viewing mock-ups detailing the proposed product with the new component and its intended implementation.*

*Key Terms*

*Authentic Education Settings: The environment where the education technology product is being delivered. The authentic education setting varies by the intended user population. Refer to section IX. Priority Areas, for further specifications in regular and special education.*

*Usability: The extent to which the product (or prototype) functions as intended, and the extent to which the intended user understands or can learn to use the product (or prototype) effectively and efficiently, and is physically able to use the product (or prototype).*

*Feasibility: The extent to which the product can be implemented within the requirements and constraints of an authentic education setting.*

*Initial Feasibility: After using a prototype, the extent to which the user believes the full product concept could be implemented within the requirements and constraints of an authentic education setting, and the extent to which a user believes the product could have potential for improving user outcomes.*

*Fidelity of Implementation: The extent to which the product is being delivered as it was designed to be by end users in an authentic education setting.*

*Promise of Outcomes: The extent to which the pilot research shows improvement in student academic achievement or other outcomes of interest.]*

[Insert Text Here]

**e. Similar products or typical practices**

*[Describe similar products or current typical practices in the proposed area. Summarize the relevant research that is available on these products or practices. Describe why the proposed product will be sufficiently different from and better than current products or practices. In doing so, describe shortcomings of the current products or practices and why the proposed product will not suffer from the same shortcomings. ]*

[Insert Text Here]

**f. Potential commercial application**

*[After the product is fully developed through Phase I and II R/R&D, describe how it will be commercialized in the private sector marketplace. This description should include examples of how the product will be disseminated to potential end-users and revenue strategies to sustain the product over time.*

*NOTE: In Appendix H, offerors may include up to three (3) letters to endorse the significance of the product and the plans for its commercialization in the private market. See Appendix H for further information.]*

[Insert Text Here]

**2. Phase I Technical Objectives**

**a. Phase I R/R&D objectives**

*[State the specific objectives of the Phase I R/R&D effort. Clearly identify each of the critical components of the prototype that will be developed in Phase I and what work will be completed in order to have a fully functioning prototype. The Phase I R/R&D objectives should include activities to test the usability of the prototype and the initial feasibility of the product concept with the intended end-user. ]*

[Insert Text Here]

**b. Project timeline**

*[Explain how the proposed objectives will be accomplished within six months. A timeline should be included.]*

[Insert Text Here]

**3. Phase I Work Plan**

*[Offerors should provide a detailed plan of the technological R/R&D activities that will occur in Phase I, including what will be done, where it will be done, and how it will be carried out. The Phase I R/R&D plan should address the objectives detailed in Section III.F.2. (Phase I Technical Objectives). Offerors should make clear how the work plan addresses each of the objectives.]*

**a. Development of the prototype**

*[As part of the plan, offerors should describe the R/R&D procedures through which a prototype will be developed and fully functioning. Offerors should describe the procedures that will be used to test and refine the prototype, and for concept testing where users (e.g., students, teachers, service providers) provide feedback after viewing mock-ups detailing the plans for the full product and its intended implementation. For Phase I research, offerors should describe how and when data will be collected, the characteristics of the sample users participating in the research (e.g., students, teachers), and the procedures for analyzing data and drawing conclusions from it. ]*

[Insert Text Here]

**b. Research on the usability of the prototype and the initial feasibility of the product concept**

*[At the end of the Phase I period, offerors should describe the research processes that will be used to demonstrate the usability (or functioning) of the prototype when it is used by the anticipated end user (e.g., student, teacher, guidance counselor, speech therapist, administrator). Offerors must also describe research to assess initial feasibility after the prototype is used and the end users are presented the plans or mock-ups for the full product.*

*Such research might involve conducting a small pilot test of the prototype being used in a classroom or school to determine the extent to which the intended user understands or can learn to use the prototype effectively and efficiently and is physically able to use the prototype (usability), and believes this product could be successfully implemented after using the prototype and seeing plans and mock-ups for the for the intended full product concept (initial feasibility).*

*Offerors might include a think-aloud study in which a small sample of intended end-users provides feedback on what they are thinking as they use the prototype and as they see additional plans for the fully developed product. Such studies can help developers, for example, identify instructions that are not clear, determine if users will click on links to obtain additional information, detect trouble spots that users have difficulty navigating, or determine if the full product concept is missing a necessary component that was not originally planned.*

*To describe the usability and initial feasibility research, offerors should include the following details:*

*Research questions. Offerors should pose clear, concise research questions. For example:*

*For Usability: Does the prototype function as intended? Are users able to follow the instructions for using the prototype?*

*For Initial Feasibility: After testing the prototype and seeing plans or mock-ups for the full development of the product, are users engaged by the prototype and the description of the full product? Do users believe the product could be successfully implemented and that the product could have potential for improving user outcomes?*

*Sample. Phase I Pilot studies should include a small sample of individuals who are similar to the intended user population. Describe the population (e.g., students, instructors, administrators) and the setting (e.g., laboratory, school, child-care facility) that will be used in the R/R&D activities to develop the prototype and to assess the usability and initial feasibility of the prototype.*

*NOTE: Offerors must include one letter of agreement from an authentic education setting for participation in research should the proposal be awarded. This letter should be no longer than one (1) page, and is to be included in Appendix B.*

*Measures. Describe the instruments that will be used to measure usability and initial feasibility and where appropriate, include information on reliability and validity of these instruments.*

*Procedures. Describe when and how data will be collected to determine the usability and initial feasibility. Include a clear and detailed description of the data analysis procedures, including the hypotheses to be tested and the outcome measures to be used. For quantitative data, specific statistical procedures must be described. For qualitative data, the specific methods used to index, summarize, and interpret data must be delineated.*

*In concluding this section, offerors should discuss how the Phase I R/R&D will provide a foundation for the Phase II R/R&D effort.]*

[Insert Text Here]

**c. Potential Problems**

*[Describe any potential problem areas that are anticipated in Phase I and provide alternative strategies that would be considered in such circumstances. ]*

[Insert Text Here]

**4. Project Team – Biographical Summary of Each Key Project Team Member**

*[Within this section in the 15-page narrative, offerors must list and provide a short biographical summary for each member of the project team, including consultants.*

*In the summary provided for the principal investigator, describe educational qualifications and experience that are most relevant to the proposed project. Describe why this individual is capable of managing the proposed project.*

*In the summary of the qualifications of each of the remaining key personnel, describe the role of each individual in the project and their relevant experience. Demonstrate that the time commitment of key personnel is large enough to complete the work.*

*The project team should have expertise in the design and development of education technology products, education theory and practice, education (or special education) research, research methods for the development and research of education technology (including experience performing research in education settings), and in the commercialization of education or technology-related products. In addition, ED strongly encourages offerors interested in applying to this program to assemble research teams that have expertise in, instruction and the targeted content domain (e.g., history, early intervention, child development).*

*NOTE: While biographical summaries must be included within the 15-pages, Appendix C must also include two certifications and a 1-page resumé for each of the key personnel listed above in 4. Project Team. ]*

[Insert Text Here]

**5. Resources**

*[The conduct of advanced R/R&D may require the use of sophisticated instrumentation or computer facilities. The offeror must describe the adequacy of available support, including facilities, equipment, supplies, and other resources, from the proposing firm and from sub-contractors to carry out necessary Phase I R/R&D. ]*

[Insert Text Here]

**6. Cost Breakdown/Proposed Budget**

*[Offerors must provide Phase I budget information in Appendix E. The budget cannot exceed the maximum dollar amount of $150,000. Proposals with budgets exceeding $150,000 will be rejected prior to review. See Appendix E for formatting requirements. This budget information is not counted toward the 15-page limit of the project narrative.]*

[Insert Text Here]

**7. Human Subjects**

*[Offerors should include information on human subjects (if applicable) in Appendix F. See Appendix F for information. Human subjects information is not counted toward the 15-page limit of the project narrative.]*

[Insert Text Here]

**8. Similar or Closely Related Awards or Proposals**

*[Offerors should include information on Similar or Closely Related Awards or Proposals (if applicable) in Appendix D. See Appendix D for information. This proposal information is not counted toward the 15-page limit of the project narrative.*

*WARNING: Although with prior notification it is permissible to submit identical or essentially equivalent proposals for consideration under numerous Federal program solicitations, it is unlawful to enter into contracts requiring essentially equivalent effort. If there is any question concerning this, it must be disclosed to the soliciting agency or agencies before award.]*

[Insert Text Here]

**9. Documentation and Status of Prior SBIR Phase II Awards**

*[Offerors are required to include information on Documentation and Status of Prior Phase II Awards (if applicable) in Appendix A. See Appendix A for information. This proposal information is not counted toward the 15-page limit of the project narrative.]*

[Insert Text Here]

1. (Harvard Kennedy School Communications, 2013) [↑](#footnote-ref-1)
2. (Henderson, 1987) [↑](#footnote-ref-2)
3. (Jeynes, 2003) [↑](#footnote-ref-3)
4. (Emerson, Fear, Fox, & Sanders, 2012) [↑](#footnote-ref-4)