**An interactive collaboration tool to aid the teaching of web development**  
  
Chloe Sunter[[1]](#footnote-1)

*School of Computing Science, Newcastle University, UK*

Supervisor: Steve Riddle

Theme: Education

1. **Introduction**

The outcome of this project is to develop an interactive collaboration tool that can be used alongside current web development teaching methods for beginners. It will involve the user having to complete a range of tasks that would occur when creating a website - for example, building a navigation bar in HTML, styling a heading in CSS, handling event listeners in JavaScript, creating an API, searching a database with SQL, and so on. These tasks may be dependant on each other to create a project workflow environment as it would be in the real world and users can collaborate using individual devices to split the work and simulate a team.

It is aimed at beginners, but the users are expected to have some knowledge prior to using the tool as this will be an aid to teaching, not a replacement. The tasks will be simple and abstract versions of the examples given above, with the focus being on learning the languages and reinforcing the basics – therefore topics such as version control, data encryption, hosting, internet protocols, and so on are considered out of scope for this project.

Repetition through typing will be used to increase the learning rate of coding languages alongside quiz like tasks which may include (but not limited to):

* finding the errors in a given piece of code,
* filling in the missing parts of a piece of code using a description of functionality or style
* writing a simple SQL query to retrieve data from the database
  1. *Motivation*

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* 1. *Aims and Objectives*

Objective 1: Explore and research current approaches to teaching web development to beginners.

Objective 2: Explore the impact collaboration and group working has on individuals, assess how this impacts their learning and effects their opinions on the taught topic.

Objective 3: Understand the limitations of producing an educational product with a large topic area.

Objective 4: Develop an online tool that can be easily accessed and used by both young students and adults new to programming.

Objective 5: Gather and create a range of tasks/code snippets relevant to web development - with a variety of languages, frameworks and web stacks included. These should be linked with a ‘rough’ end goal in place so that users have a scenario to work with.

Objective 6: Develop a feature that allows for users to join a shared session remotely and work together as a group to simulate real world development teams. This should include users having a ‘role’ or a specific ‘skill set’ which determines what tasks they work on to contribute.

Objective 7: Gather evidence, evaluate, and discuss the usability and effectiveness of the product.

* 1. *Project Plan*

This project will last for 3 weeks in total. Prior to this, a small amount of time will be allocated to drawing up initial ideas for the project topic and research into the technologies and tools need to implement said ideas. The official 3 weeks will be used to design and implement the project, as well as write up the dissertation.

Timeline

Description automatically generated

The chart above shows the overview of tasks to be completed throughout the project and dissertation write up as well as all the deliverable deadlines, which are indicated by the diamond shapes at the bottom. This diagram will need further refinement to break up the larger tasks into smaller tasks.

1. **Background**
   1. *Background*

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CHALLENGES AND PROFESSIONAL TOOLS USED WHEN TEACHING WEB PROGRAMMING - PAGE129 onwards. It is a collection of works, so I will need to look for the original.

* <https://www.researchgate.net/profile/Quoc-Nam-Tran/publication/234829132_Improving_non-small_cell_lung_cancer_classification_in_data_mining_courses/links/54f651110cf2ca5efefdea2f/Improving-non-small-cell-lung-cancer-classification-in-data-mining-courses.pdf#page=129>

Teaching Web development technologies in CS/IS curricula

* <https://dl.acm.org/doi/abs/10.1145/273133.273172>

Teaching web development in the web 2.0 era

* <https://dl.acm.org/doi/abs/10.1145/1631728.1631753>
  1. *Related Works*

Static Tutorials

* W3Schools

Interactive Tutorials

* Codecademy

Online Collaboration Examples

* Kahoot

Game Examples

* [https://tutorialzine.com/2016/05/10-fun-browser-games-for-learning-web-development](%20https:/tutorialzine.com/2016/05/10-fun-browser-games-for-learning-web-development)

1. **Design**

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1. **Implementation**

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1. **Evaluation**

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1. **Conclusions and further work**

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1. **Acknowledgements (*optional and unmarked*)**

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**References**

1. Email: C.Sunter@newcastle.ac.uk [↑](#footnote-ref-1)